学术英语写作

Scientific Writing

第一章 绪论

提纲

一 为什么要发表?

二 发表什么论文?

三 哪里发表论文?

一、为什么要发表

发表乎？

medRxiv
THE PREPRINT SERVER FOR HEALTH SCIENCES
CSH Cold Spring Harbor Laboratory
BMJ
Yale
HOME | ABOUT
Search
Comments (13)
Clinical characteristics of 2019 novel coronavirus infection in China
Wei-jie Guan, Zheng-yi Ni, Yu Hu, Wen-hua Liang, Chun-quan Ou, Jian-xing He, Lei Liu, Hong Shan, Chun-liang Lei, David S.C. Hui, Bin Du, Lan-juan Li, Guang Zeng, Kwok-Yung Yuen, Ru-chong Chen, Chun-li Tang, Tao Wang, Ping-yan Chen, Jie Xiang, Shi-yue Li, Jin-lin Wang, Zi-jing Liang, Yi-xiang Peng, Li Wei, Yong Liu, Ya-hua Hu, Peng Peng, Jian-ming Wang, Ji-yang Liu, Zhong Chen, Gang Li, Zhi-jian Zheng, Shao-qin Qiu, Jie Luo, Chang-jiang Ye, Shao-yong Zhu, Nan-shan Zhong
doi: https://doi.org/10.1101/2020.02.06.20020974

疫情防控

一、为什么要发表

发表乎？

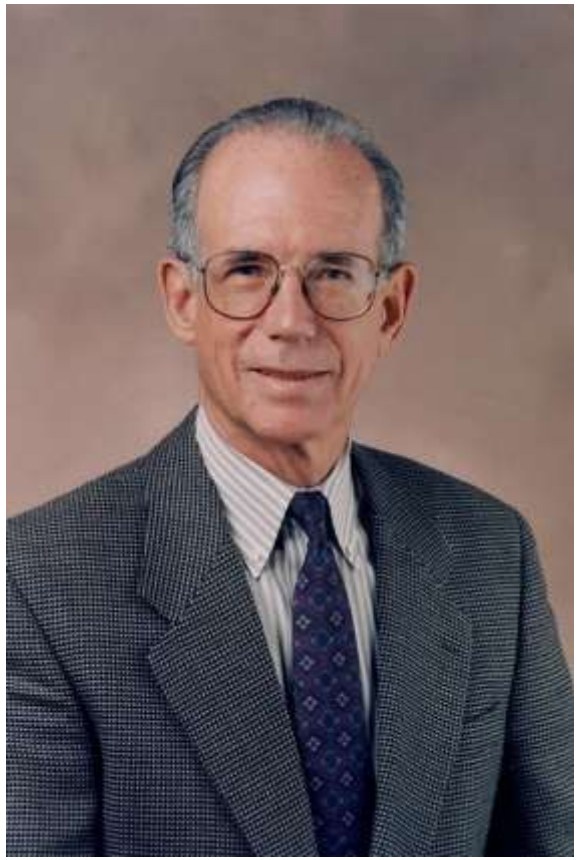
- 1099例患者来自31个省及直辖市的552家医院，41.9%是女性，年龄中位数为47岁；
- 大概三分之一曾到过武汉，大概三分之二曾接触过来自武汉的人，而极少数有野生动物接触史。
- 潜伏期最长的达到了24天，潜伏期中位时间为3天。
- 重症肺炎占比15.7%，死亡患者占比为1.36%。

一、为什么要发表

➢ 建立科学记录、推动科学发展

我们所有的思考、分析、实验和数据收集工作，在撰写论文之前，就什么都不算。在学术领域，我们的成果是以写出的东西来体现的，出版物就像硬通货币，是学术成果的基本表现形式。。。如果结果没有公开发表，就等于没有做实验，这是不言而喻的事情。

----- D. Kennedy



一、为什么要发表

➢ 促进知识传播、推动社会进步

It is high time that scientists apply scientific thinking to determine how to better communicate their science. Science progresses through experimentation and evidence. I would like to think that science communication can as well.

-----M. McNutt

Improving Scientific Communication

MARCIA MCNUTT

SCIENCE • 4 Oct 2013 • Vol 342, Issue 6154 • p. 13 • DOI: 10.1126/science.1246449

231 11

Even the most brilliant scientific discovery, if not communicated widely and accurately, is of little value. And with the explosion of science around the globe, the dissemination of scientific information, once the purview of learned societies and a handful of publishers, is now a growth industry. This growth has attracted new models and new providers of services. In the process, the standards for scientific communication are slipping (see the special section on Communication in Science beginning on p. 56). The science community must explore new ways to improve upon them.

一、为什么要发表

➢ 培养科研人才、实现科学教育

日前，中国科学院大学“科幻文学与影视创作系列讲座课”的老师给22名期末文章抄袭的学生打了0分，给学生敲响了一记警钟。因为自身积累不足、缺乏相关训练以及本科论文不受重视等原因，大学生论文抄袭现象普遍存在于校园之中。

- 76.4%的受访者周围存在抄袭课程论文的情况
- 88.0%的受访者希望大学开设论文写作课程

-----王品芝，顾凌文《中国青年报》

一、为什么要发表

➢ 展示科研业绩、实现个人发展

- 人类社会：Communication or Perish 不交流即消亡
- 科学研究：Publish or Perish 不发表即消亡

三、申请条件

凡申请参加“申请-考核”制的考生必须满足我校当年博士研究生招生简章规定的报考条件，并且符合以下基本条件：

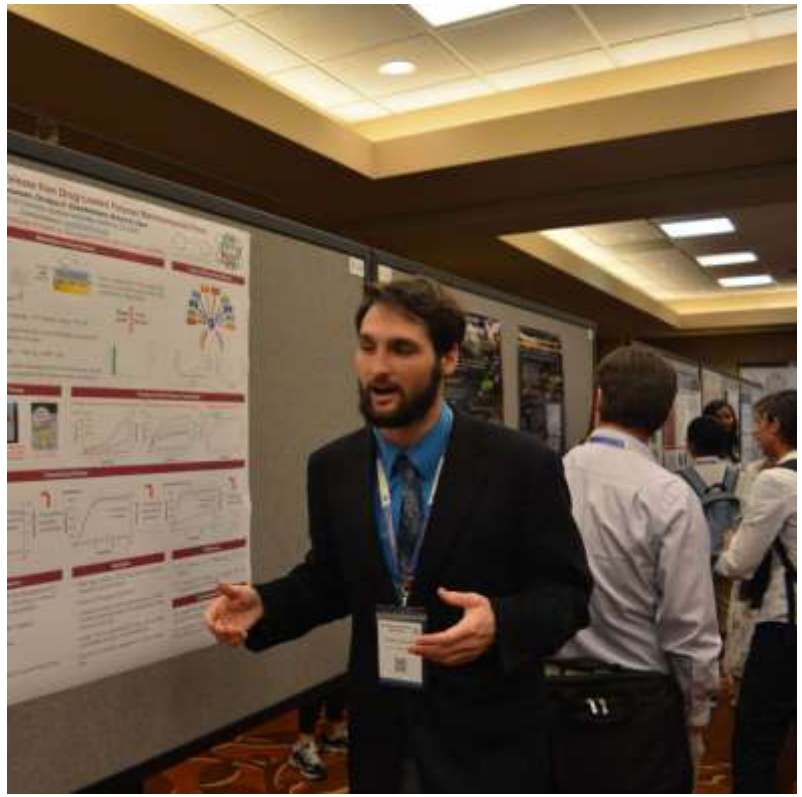
1. 诚实守信，学风端正，无任何考试作弊、学术不端及其它违法违纪受处分记录；

2. 在校期间学习成绩优秀，对科学研究具有浓厚兴趣，并具有突出的科研能力，有较强的创新意识、创新能力和专业能力倾向，科研成果突出；（招生院（系）可以自定学术要求）

3. 所有考生须参加当年度上海大学组织的博士研究生招生外国语水平考试，成绩符合要求者可进入院系考核环节；（成绩要求由招生院（系）自定）

4. 报考就业方式一般应为非定向就业，即入学前须将考生本人全部人事档案和组织关系等转入我校，不接受同等学力考生申请；

5. 实施“申请-考核”制的院（系）或学科规定的其他条件。



提纲

一 为什么要发表?

二 发表什么论文?

三 哪里发表论文?

二、发表什么论文

➢ 按照写作目的分类

- 学术论文（Paper）

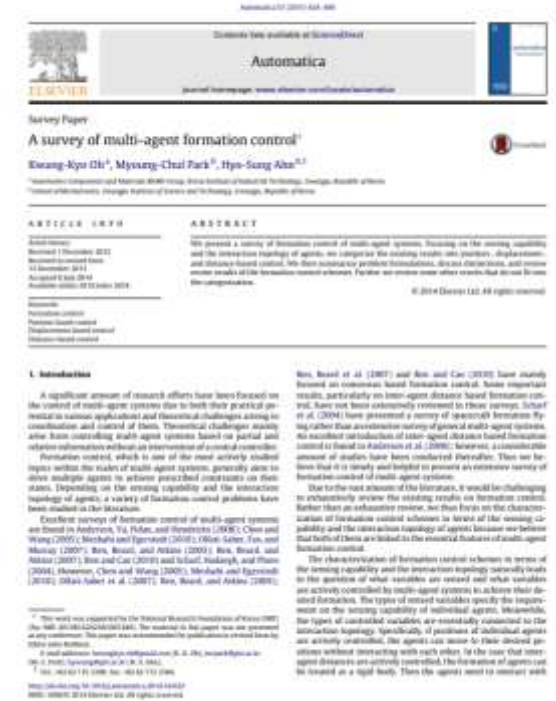
研究报告、综述、评论、专题研究等

- 学位论文（Thesis）

学士、硕士、博士等

- 科技报告（Report）

报告、札记、备忘录、通报、论文等



二、发表什么论文

➢ 特点

- 科学性——基础

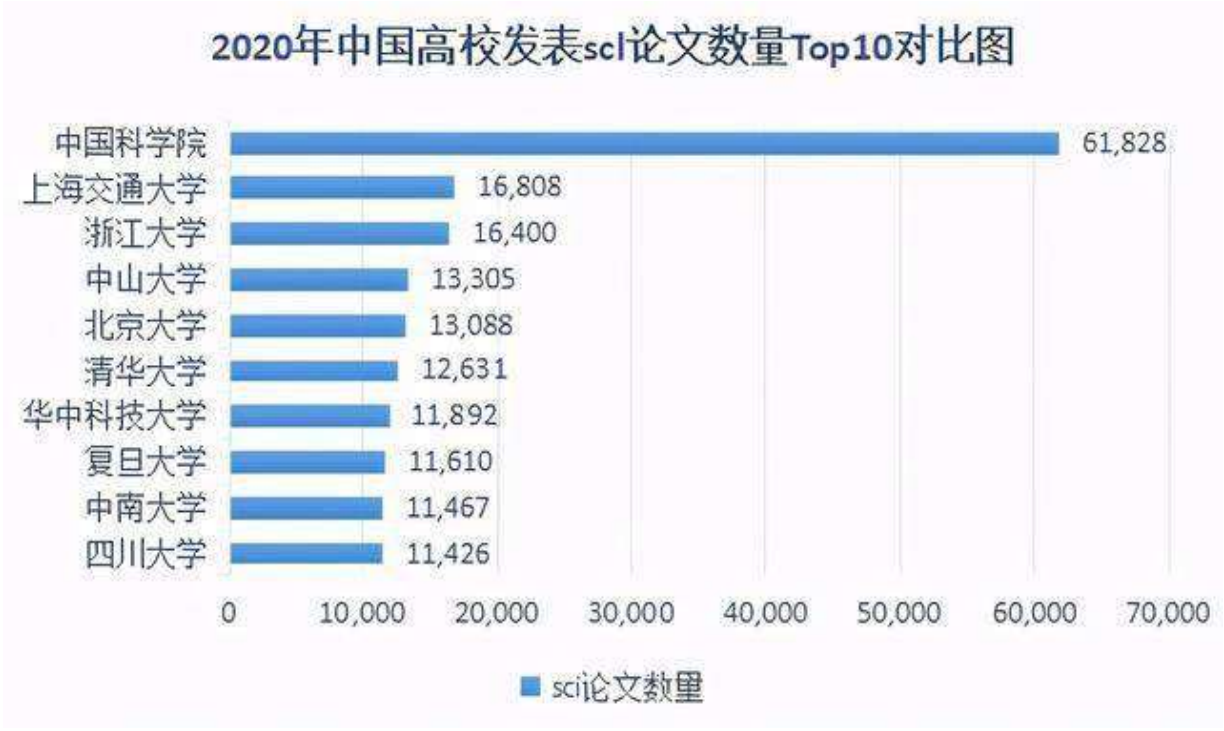
论述内容具有科学可信性，足够的可靠的实验数据作立论基础。

- 创新性——灵魂

必须有所发现、发明，有所创造，不是对前人工作的复述、模仿或解释。

- 逻辑性—条件

结构严谨，符号规范，图表精致，自成系统。



二、发表什么论文

➢ 关于创新性的说明

- 创新有原始创新和集成创新两种。
- 工学类论文中，原始创新比较少，大多是提出一些新方法、新算法，或是以别人没有用过的方法对一个问题进行分析，属于集成创新。
- 虽然这也是可取的，但论文必须雄辩地说明采用新方法所取得的结果。

二、发表什么论文

➢ 学术论文——论文

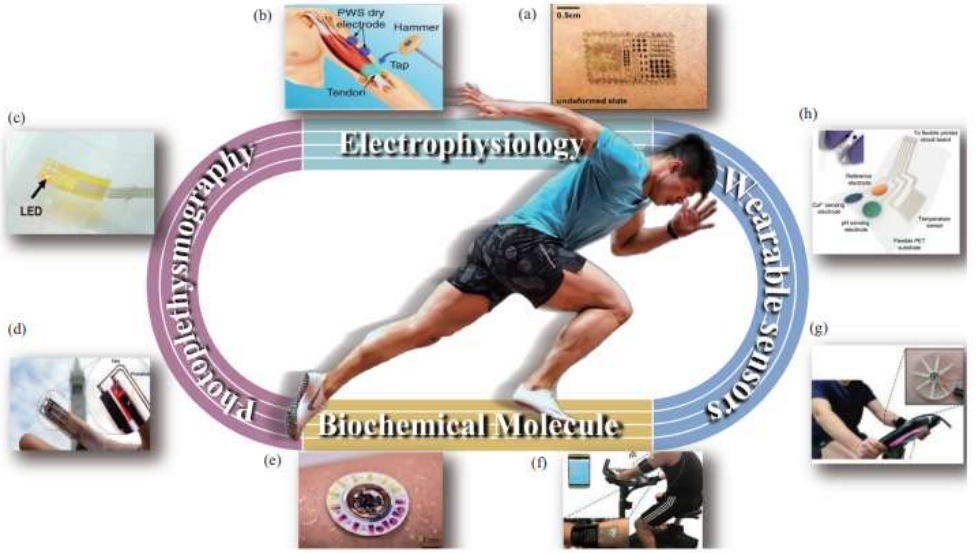
- 某一学术课题在实验性、理论性或观测性上具有新的科学研究成果或创新见解和知识的科学记录；或是某种已知原理应用于实际中取得新进展的科学总结。
- 内容应提供新的科技信息，有所发现、有所发明、有所创新，而不是重复、模仿、抄袭前人的工作。

中国科学：信息科学 2022 年 第 52 卷 第 1 期: 54–74
SCIENTIA SINICA Informationis
《中国科学》杂志社
SCIENCE CHINA PRESS
评述

科学训练辅助：柔性可穿戴传感器运动监测应用

苏炳添[1,3†], 李健良[2†], 徐慧华[2], 徐泽[3], 孟建新[2], 陈小平[1,4*], 李凤煜[2*]

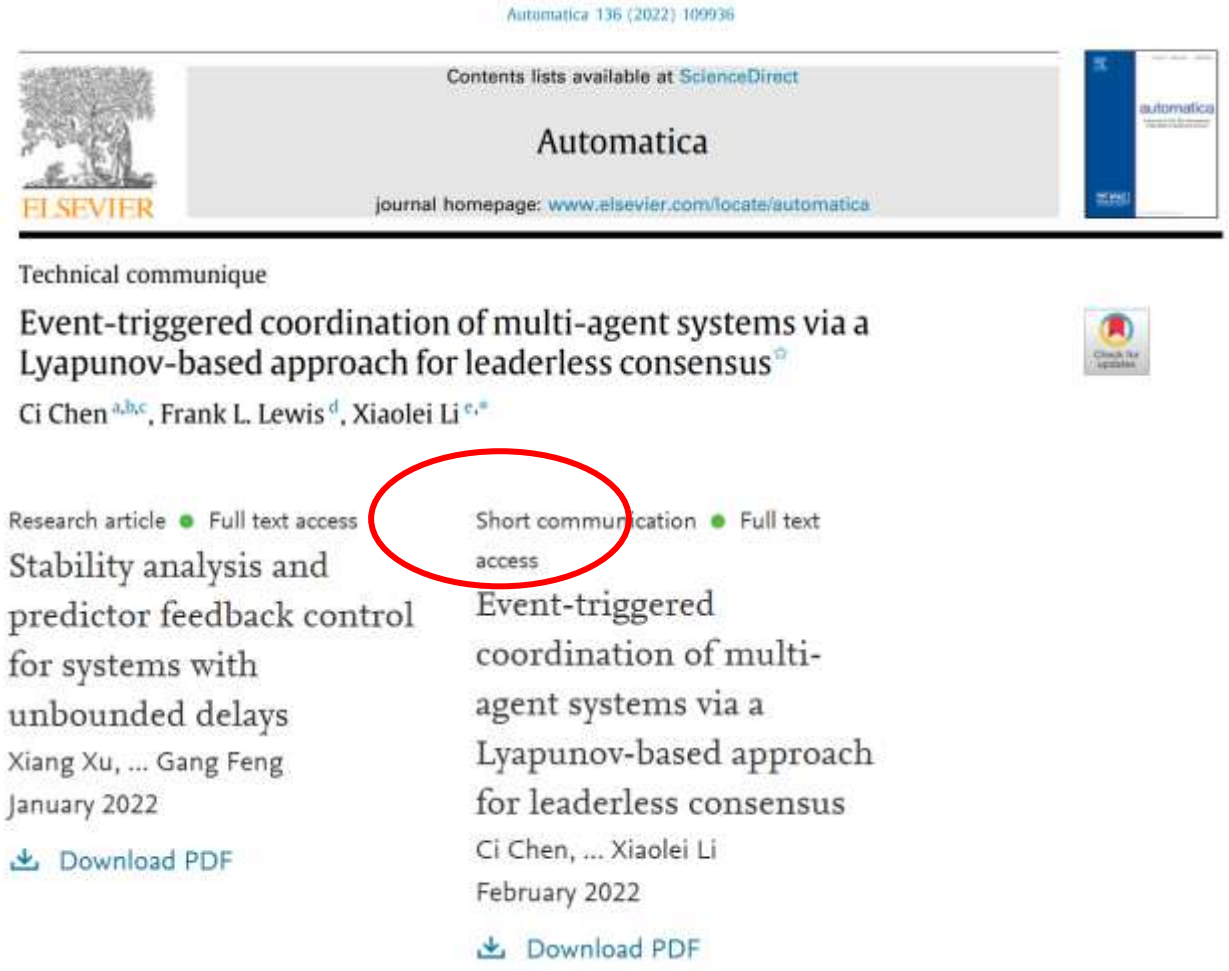
1. 北京体育大学体能训练学院, 北京 100084
2. 暨南大学化学与材料学院, 广东省功能配位超分子材料及应用重点实验室, 广东省石墨烯类功能及高性能材料与制品 (器件) 工程技术研究中心, 广州 510632
3. 暨南大学体育学院, 广州 510632
4. 国家体育总局体育科学研究所, 北京 100061



二、发表什么论文

➢ 学术论文——简报

- 由于版面字数等的限制，有些专题研究论文常以研究简报(研究快报和研究通讯)的形式发表。
- 可以写研究简报的情况有：1、重要科研项目的阶段总结或小结(有新发现)；2、某些方面有突破的成果；3、重要技术革新成果，包括技术或工艺上取得突破，经济效益好。
- 快报类科技期刊只收研究简报类文章。



二、发表什么论文

➢ 硕士学位论文

- 应在导师指导下，研究生本人独立完成，论文具有自己的新见解，有一定的工作量。
- 强调文章的系统性，详细研究背景意义、研究现状、研究方法和取得的结果等。

➢ 以下情况不能作为硕士学位论文!

- 资料综述性文章；
- 只解决问题而没有理论分析；
- 只计算机计算而没有实践证明；
- 只做实验而未得出肯定的结论；
- 只重复前人的工作而没有创新；

提纲

一 为什么要发表?

二 发表什么论文?

三 哪里发表论文?

三、哪里发表论文?

习近平讲话原文：广大科技工作者要把论文写在祖国的大地上，把科技成果应用在实现现代化的伟大事业中。

□ 南京大学谭海仁教授团队《Nature》发文报道全钙钛矿叠层电池研究进展

通过采用更厚的窄带隙吸光层，成功将全钙钛矿叠层电池的短路电流密度提升到16.5 mA/cm2以上，实现了更高效率的全钙钛矿叠层太阳能电池，实验室自测效率从25.6%提高到26.7%，同时研制出效率高达25.3%的大面积叠层电池。来源：南京大学

□ 北京大学瞿礼嘉教授团队《Science》发文揭示模式植物拟南芥通过小肽信号及其受体介导的信号通路防止多精受精的分子机制

首次阐明了在花柱道隔膜处防止多花粉管穿出屏障的建立是有赖于雌（受体）-雄（小肽信号）双方的相互作用，揭示了拟南芥中防止多花粉管受精的分子机制。来源：北京大学

□ 中国科大潘建伟院士团队等与海外团队合作《Science》发文报道首次观测到费米超流中的熵波临界发散

研究团队首次在处于强相互作用（幺正）极限下的费米超流体中观测到了熵波衰减的临界发散行为，揭示了该体系存在着一个可观的相变临界区，并获得了热导率与粘滞系数等重要的输运系数。该项工作为理解强相互作用费米体系的量子输运现象提供了重要的实验信息，是利用量子模拟解决重要物理问题的一个范例。来源：中国科学技术大学

□ 北航郭林教授团队与合作者《Science》发文报道类牙釉质复合材料研究进展

研究团队设计了基于纳米结构单元的宏量合成及可控组装的多尺度类牙釉质复合材料合成路线，实现了迄今为止与牙釉质结构最为相近的类牙釉质复合材料的可控制备，首次实现了具有类牙釉质非晶间质层的复合材料的仿生合成。该研究为下一代生物力学性能匹配的牙修复材料，以及综合力学性能更为优异的工程材料的设计合成提供了借鉴，有望成为新一代牙齿修复材料。来源：北京航空航天大学

三、哪里发表论文?

➢ 科技期刊知识介绍

- 影响因子（IF--impact factor）：期刊影响因子是以期刊为对象，统计在一定时域内期刊论文的平均被引率。在这里，论文量、时间和被引次数是计算影响因子的三个基本要素。
- 国际著名综合性期刊

NATURE（49.962）

SCIENCE（47.728）

CELL（41.582）

□ **南京大学谭海仁教授团队《Nature》发文报道全钙钛矿叠层电池研究进展**

通过采用更厚的窄带隙吸光层，成功将全钙钛矿叠层电池的短路电流密度提升到16.5 mA/cm2以上，实现了更高效率的全钙钛矿叠层太阳能电池，实验室自测效率从25.6%提高到26.7%，同时研制出效率高达25.3%的大面积叠层电池。来源：南京大学

□ **北京大学瞿礼嘉教授团队《Science》发文揭示模式植物拟南芥通过小肽信号及其受体介导的信号通路防止多精受精的分子机制**

首次阐明了在花柱道隔膜处防止多花粉管穿出屏障的建立是有赖于雌（受体）-雄（小肽信号）双方的相互作用，揭示了拟南芥中防止多花粉管受精的分子机制。来源：北京大学

□ **中国科大潘建伟院士团队等与海外团队合作《Science》发文报道首次观测到费米超流中的熵波临界发散**

研究团队首次在处于强相互作用（幺正）极限下的费米超流体中观测到了熵波衰减的临界发散行为，揭示了该体系存在着一个可观的相变临界区，并获得了热导率与粘滞系数等重要的输运系数。该项工作为理解强相互作用费米体系的量子输运现象提供了重要的实验信息，是利用量子模拟解决重要物理问题的一个范例。来源：中国科学技术大学

□ **北航郭林教授团队与合作者《Science》发文报道类牙釉质复合材料研究进展**

研究团队设计了基于纳米结构单元的宏量合成及可控组装的多尺度类牙釉质复合材料合成路线，实现了迄今为止与牙釉质结构最为相近的类牙釉质复合材料的可控制备，首次实现了具有类牙釉质非晶间质层的复合材料的仿生合成。该研究为下一代生物力学性能匹配的牙修复材料，以及综合力学性能更为优异的工程材料的设计合成提供了借鉴，有望成为新一代牙齿修复材料。来源：北京航空航天大学

神刊：CA-A CANCER JOURNAL FOR CLINICIANS （508.7）

三、哪里发表论文?

- NATURE每周收到的稿件约有170篇，折合年来稿量约8000余篇。
- 通过论文评审程序: 编辑初选、同行评议、编辑评价和论文修改，最终都仅有10%的稿件被选用。
- 正是因为有如此广泛的稿源作为同行评议的基础，加之专家的高水平评议，才构成了NATURE和SCIENCE的“学术聚焦”效应。
- 这种聚焦效应不仅体现在期刊的内容对科学的重要事件有快速反应，而且还体现在它们对世界范围内科学家的吸引力。

三、哪里发表论文?

➢ 控制方向期刊推荐——三大顶刊

- IEEE Transactions on Automatic Control（5.792）
- Automatica（5.944）
- SIAM Journal on Control and Optimization（2.267）

点击查看中科院JCR分区趋势图

中科院SCI期刊分区（2021年12月最新基础版）	大类学科	小类学科	Top期刊	综述期刊
	工程技术 2区	AUTOMATION & CONTROL SYSTEMS 自动化与控制系统 2区 ENGINEERING, ELECTRICAL & ELECTRONIC 工程：电子与电气 2区	是	否

中科院SCI期刊分区（2021年12月最新升级版）	大类学科	小类学科	Top期刊	综述期刊
	计算机科学 2区	AUTOMATION & CONTROL SYSTEMS 自动化与控制系统 2区 ENGINEERING, ELECTRICAL & ELECTRONIC 工程：电子与电气 2区	是	否

中科院SCI期刊分区（2020年12月旧的升级版）	大类学科	小类学科	Top期刊	综述期刊
	计算机科学 2区	AUTOMATION & CONTROL SYSTEMS 自动化与控制系统 2区 ENGINEERING, ELECTRICAL & ELECTRONIC 工程：电子与电气 2区	是	否

三、哪里发表论文?

➢ 控制方向期刊推荐——旗舰期刊

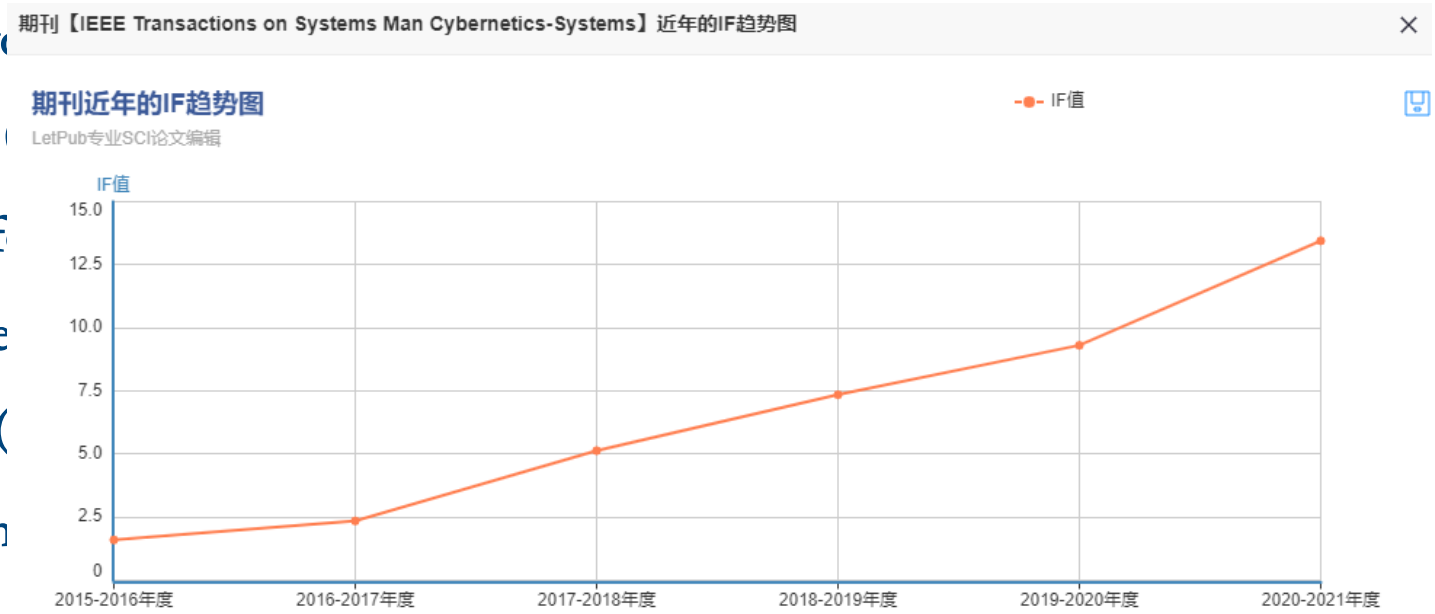
- Systems & Control Letters（2.804）
- Control Engineering Practice（3.475）
- IEEE Transactions on Control Systems Technology（5.485）
- Annual Reviews in Control（6.091）
- Journal of Process Control（3.666）
- International Journal of Control（2.888）
- European Journal of Control （2.395）

中国自动化学会推荐学术期刊目录
http://www.caa.org.cn/Public/FCKuploads/00.pdf

三、哪里发表论文?

➢ 控制方向期刊推荐——交叉期刊

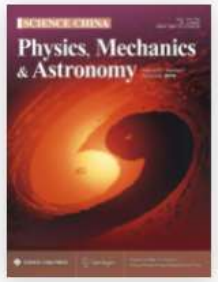
- IEEE Transactions on Pattern Analysis and Machine Intelligence（16.389）
- IEEE Transactions on Systems Man Cybernetics-Systems（13.451）
- IEEE Transactions on Neural Netw
- IEEE Transactions on Cybernetics
- IEEE Transactions on Industrial Inf
- IEEE Transactions on Industrial Ele
- IEEE Transactions on Smart Grid（
- IEEE/ASME Transactions on Mech
- IEEE Transactions on Robotics（5.



三、哪里发表论文?

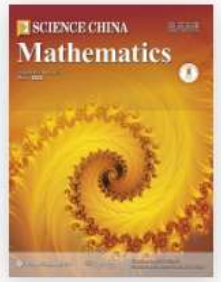
➢ 控制方向期刊推荐——中文期刊

- 中国科学（技术科学、信息科学、数学、物理学等）
- 自动化学报
- 控制理论与应用
- 控制与决策
- 仪器仪表学报
- 模式识别与人工智能
- 中国图形图象学报
- 宇航学报
- 机器人

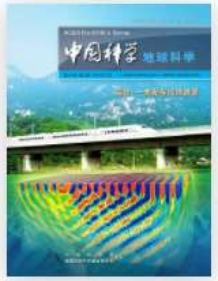


SCIENCE CHINA Physics, Mechanics & Astronomy
ISSN：1674-7348

中国科学：化学
ISSN：1674-7224



SCIENCE CHINA Mathematics
ISSN：1674-7283



中国科学: 地球科学
ISSN：1674-7240

中国科学: 技术科学
ISSN：1674-7259

中国科学: 信息科学
ISSN：1674-7267

三、哪里发表论文?

➢ Science Citation Index，SCI

- 美国《科学引文索引》于1957年由美国科学信息研究所（Institute for Scientific Information, 简称ISI）在美国费城创办。
- SCI数据库不断发展，已经成为当代世界最为重要的大型数据库，被列在国际六大著名检索系统之首。
- 它是评价一个国家、一个科学研究机构、一所高等学校、一本期刊，乃至一个研究人员学术水平的重要指标之一。
- SCI 主要收录数学、物理、化学等自然科学的论文。
- SCI 和SCIE (SCI Expanded) 形式。

三、哪里发表论文?

➢ Engineering Index，EI

- 美国《工程索引》在1884年由美国工程信息公司（Engineering Information Inc.）创办，是一个主要收录工程技术期刊文献和会议文献的大型检索系统，被称为国际六大著名检索系统之一。
- 不再区分EI Compendex和EI Page One。
- 中国自动化学会控制理论专业委员会
  https://cms.amss.ac.cn

三、哪里发表论文?

➢ 中文核心期刊

- 科技核心：中国科技信息研究所（简称中信所）每年出一次的《中国科技期刊引证报告》（以下简称《引证报告》）。
- 北大核心：北京大学图书馆与北京高校图书馆期刊工作研究会联合编辑出版的《中文核心期刊要目总览》（以下简称《要目总览》），不定期出版。
- 科技核心的学科范畴是自然科学领域，北大核心收编包括社会科学和自然科学等各种学科类别的中文期刊。

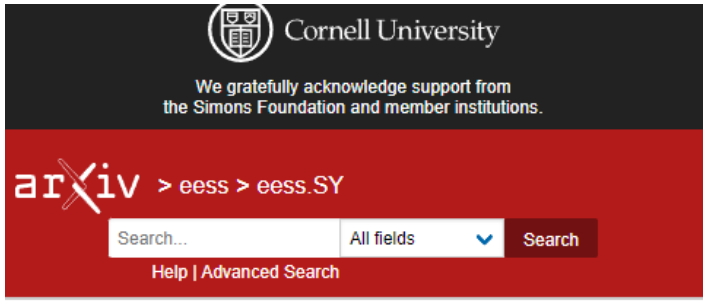
三、哪里发表论文?

➢ 电子预印本网站arxiv.org

- arXiv is a free distribution service and an open-access archive for 2,025,830 scholarly articles in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance, statistics, electrical engineering and systems science, and economics. Materials on this site are not peer-reviewed by arXiv.
- To: eess@arxiv.org

  Subject: subscribe XXX

  add Systems and Control



Systems and Control

Authors and titles for recent submissions

- Mon, 28 Feb 2022
- Fri, 25 Feb 2022
- Thu, 24 Feb 2022
- Wed, 23 Feb 2022
- Tue, 22 Feb 2022

[total of 87 entries: **1-25** | 26-50 | 51-75 | 76-87]
[showing 25 entries per page: fewer | more | all]

Mon, 28 Feb 2022

[1] arXiv:2202.12879 [pdf, ps, other]
Model predictive control for retinal laser treatment at 1 kHz
Manuel Schaller, Viktoria Kleyman, Mario Mordmüller, Christian Schmidt, Mitsuru Wilson, Ralf Brinkmann, Matthias A. Müller, Karl Worthmann
Subjects: **Systems and Control (eess.SY)**

[2] arXiv:2202.12803 [pdf, other]
Development of a Model Predictive Airpath Controller for a Diesel Engine on a High-Fidelity Engine Model with Transient Thermal Dynamics

三、哪里发表论文?

- 电子预印本网站arxiv.org

三、哪里发表论文?

- 电子预印本网站arxiv.org

学术英语写作
Scientific Writing

第二章 论文要点

提纲

一 标题

二 作者

三 摘要

一、标题

➢ 例子

Article

III. An instrument, for seeing the Sun, Moon, or stars, pass the meridian of any place. Useful for setting watches in all parts of the world with the greatest exactness, to correct sun-dyals; to assist in the discovery of the longitudes of places, &c.

William Derham

Published: 01 June 1704 | https://doi.org/10.1098/rstl.1704.0015

43个单词

International Journal of Engineering Science
Volume 143, October 2019, Pages 1-13

On modeling of carbon nanotubes reinforced materials and on influence of carbon nanotubes spatial distribution on mechanical behavior of structural elements

Lidiia Nazarenko [a], Aleksandr Yu. Chirkov [b], Henryk Stolarski [c], Holm Altenbach [a]

21个单词

一、标题

➢ 类型

- 报道型：对某一领域的发展动态，某项实验进行通报

[PDF] The COVID-19 vaccine development landscape

TT Le, Z Andreadakis, A Kumar, RG Román… - Nat Rev Drug …, 2020 - researchgate.net

Profile of vaccine developers. Of the confirmed active vaccine candidates, 56 (72%) are being developed by private/industry developers, with the remaining 22 (28%) of projects …

☆ 保存 99 引用 被引用次数：1074 相关文章 所有 10 个版本 »

[HTML] Recent advances in deep learning

X Wang, Y Zhao, F Pourpanah - International Journal of Machine Learning …, 20

With the recent advancement in digital technologies, the size of data sets has bec large in which traditional data processing and machine learning techniques are nc

☆ 保存 99 引用 被引用次数：62 相关文章 所有 3 个版本

一、标题

➢ 类型

- 解说型：对实验、方法、理论等解释或说明

Robust and efficient quadrotor trajectory generation for fast autonomous flight

B Zhou, F Gao, L Wang, C Liu… - IEEE Robotics and …, 2019 - ieeexplore.ieee.org

In this letter, we propose a robust and efficient quadrotor motion planning system for fast flight in three-dimensional complex environments. We adopt a kinodynamic path searching …

☆ 保存 99 引用 被引用次数：129 相关文章 所有 6 个版本

[HTML] Data driven model free adaptive iterative learning perimeter control for large-scale urban road networks

Y Ren, Z Hou, Il Sirmatel, N Geroliminis - Transportation Research Part C …, 2020 - Elsevier

Most perimeter control methods in literature are the model-based schemes designing the controller based on the available accurate macroscopic fundamental diagram (MFD) …

☆ 保存 99 引用 被引用次数：27 相关文章 所有 4 个版本

一、标题

➢ 类型

- 探索型：对方法、理论、观点等进行研究和探索

A novel robust fuzzy integral sliding mode control for nonlinear semi-Markovian jump T–S fuzzy systems

B Jiang, HR Karimi, Y Kao, C Gao - IEEE Transactions on Fuzzy …, 2018 - dl.acm.org

This paper addresses the issue of robust fuzzy sliding mode control for continuous-time nonlinear Takagi–Sugeno fuzzy systems with semi-Markovian switching. The focus is on …

☆ 保存 99 引用 被引用次数：167 相关文章 所有 2 个版本

Fault analysis and debugging of microservice systems: Industrial survey, benchmark system, and empirical study

X Zhou, X Peng, T Xie, J Sun, C Ji… - IEEE Transactions on …, 2018 - ieeexplore.ieee.org

… Our findings also suggest that there is a strong need for more intelligent trace analysis and visualization, eg, by combining trace visualization and improved fault localization, and …

☆ 保存 99 引用 被引用次数：92 相关文章 所有 9 个版本

一、标题

➢ 类型

- 综合型：兼有以上三类的特点

[HTML] Drug treatments for covid-19: living systematic review and network meta-analysis

RAC Siemieniuk, JJ Bartoszko, L Ge, D Zeraatkar… - Bmj, 2020 - bmj.com

Objective To compare the effects of treatments for coronavirus disease 2019 (covid-19). Design Living systematic review and network meta-analysis. Data sources WHO covid-19 …

☆ 保存 99 引用 被引用次数：530 相关文章 所有 21 个版本

Extended state observer-based data-driven iterative learning control for permanent magnet linear motor with initial shifts and disturbances

Y Hui, R Chi, B Huang, Z Hou - IEEE Transactions on Systems …, 2019 - ieeexplore.ieee.org

… Therefore, an iterative dynamic linearization (IDL) method is developed in … rejection control [34] is also a data-driven approach, where … In [37], an adaptive ESO-based ADRC is proposed …

☆ 保存 99 引用 被引用次数：30 相关文章

一、标题

➢ 类型

- 报道型：对某一领域的发展动态，某项实验进行通报；

The Development of the Supersonic Image Analysis in Medicine

- 解说型：对实验、方法、理论等解释或说明；

A Simple and Direct Method for the Latency Change Estimation of Evoked Potentials

- 探索型：对方法、理论、观点等进行研究和探讨；

A New Search for the Wavelet based Neuro-network

- 综合型：兼有以上三类的特点；

A Computer Simulation System for CDMA

一、标题

➢ 如何设计标题？

先拟一个标题，尽量将研究工作的关键信息放进去（关键词、概念、重要方法、重要发现），写成一个完整的句子，然后删除不必要的信息，最后。。。

第一步：Structured Joint Orthogonal Learning for Non-Gaussian Fault Detection

第二步：Orthogonal Learning for Non-Gaussian Fault Detection

第三步：Towards Efficient Orthogonal Learning for Non-Gaussian Fault Detection

一、标题

➢ 格式

- 开头第一个字母大写、专有名词大写，其余均采用小写字母

Automatica 139 (2022) 110171

Contents lists available at ScienceDirect

Automatica

journal homepage: www.elsevier.com/locate/automatica

Iterative learning control for intermittently sampled data: Monotonic convergence, design, and applications☆

Nard Strijbosch *, Tom Oomen

Control Systems Technology Group, Department of Mechanical Engineering, Eindhoven University of Technology, The Netherlands

一、标题

➢ 格式

- 开头的字母、≥5个字母的介词、连词的第一个字母大写

Multi-Task Learning With Coarse Priors for Robust Part-Aware Person Re-Identification

Changxing Ding, *Member, IEEE*, Kan Wang, Pengfei Wang, and Dacheng Tao, *Fellow, IEEE*

一、标题

➢ 格式

◘ 全部字母均大写

SIAM J. CONTROL OPTIM.
Vol. 60, No. 1, pp. 189–209

© 2022 Society for Industrial and Applied Mathematics

DYNAMIC EVENT-TRIGGERED LEADER-FOLLOWER CONSENSUS CONTROL FOR MULTIAGENT SYSTEMS*

XIAOQUN WU†, BING MAO†, XIUQI WU†, AND JINHU LU‡

一、标题

➢ 常见问题

- 应该使用名词短语，不该使用一个句子或不定式短语；

高品质封面图

第65卷 (2022)

第12期 (部分)

第11期 (部分)

2022, 第65卷, 第12期

全选 取消选择 引用 下载 PDF

LETTER

Knowledge transferred adaptive filter pruning for CNN compression and acceleration

Lihua GUO, Dawu CHEN, Kui JIA

SCIENCE CHINA Information Sciences **65** (12) , 229101 (2022) https://doi.org/10.1007/s11432-020-3162-4

下载 PDF 在线阅读 收藏 引用 推荐

一、标题

➢ 常见问题

- 一般也不用介词短语等形式；

高品质封面图

第65卷 (2022)

第12期 (部分)

2022, 第65卷, 第7期

全选 取消选择 引用 下载 PDF

RESEARCH PAPER

SAND: semi-automated adaptive network defense via programmable rule generation and deployment

Haoyu CHEN, Deqing ZOU, Hai JIN, Shouhuai XU, Bin YUAN

SCIENCE CHINA Information Sciences **65** (7) , 172102 (2022) https://doi.org/10.1007/s11432-020-3193-2

下载 PDF 在线阅读 收藏 引用 推荐

详情

一、标题

➢ 常见问题

- 标题中也不出现从句；

高品质封面图

第65卷 (2022)

2022, 第65卷, 第5期

全选 取消选择 引用 下载 PDF

RESEARCH PAPER

Efficient distributed algorithms for holistic aggregationfunctions on random regular graphs

Lin JIA, Qiang-Sheng HUA, Haoqiang FAN, Qiuping WANG, Hai JIN

SCIENCE CHINA Information Sciences **65** (5) , 152101 (2022) https://doi.org/10.1007/s11432-020-2996-2

下载 PDF 在线阅读 收藏 引用 推荐

一、标题

➢ 常见问题

- 也有用on引出的介词短语的，表示“论（关于）……”之意；

一、标题

➢ 常见问题

- 标题中开头的冠词可以省略；

高品质封面图

第65卷 (2022)

第12期 (部分)

2022, 第65卷, 第8期

全选 取消选择 引用 下载 PDF

RESEARCH PAPER

Quantum algorithm and experimental demonstration for the subset sum problem

Qilin ZHENG, Pingyu ZHU, Shichuan XUE, Yang WANG, Chao WU, Xinyao YU, Miaomiao YU, Yingwen LIU, Mingtang DENG, Junjie WU, Ping XU

SCIENCE CHINA Information Sciences **65** (8) , 182501 (2022) https://doi.org/10.1007/s11432-021-3334-1

下载 PDF 在线阅读 收藏 引用 推荐

一、标题

➢ 常见问题

- 应该使用名词短语，不该使用一个句子或不定式短语；
- 一般也不用介词短语等形式；
- 标题中也不出现从句；
- 也有用on引出的介词短语的，表示“论（关于）……”之意；
- 标题中开头的冠词可以省略；

一、标题

➢ 常见问题

* Title

Preview | Ω Special Characters

0 OUT OF 20 WORDS

ARTICLES

On the classification of certain real rank zero bmC^*-algebrasfootnotetext† Current address: School of Mathematics and Statistics, Northeast Normal University, Changchun , China †† Current address: School of Mathematical Sciences, Dalian University of Technology, Dalian , China

An Qingnan, Liu Zhichao, Zhang Yuanhang

SCIENCE CHINA Mathematics **65** (4) , 753 (2022) https://doi.org/10.1007/s11425-019-1640-5

下载 PDF 在线阅读 收藏 引用 推荐

+ 详情

提纲

一 标题

二 作者

三 摘要

二、作者

➢ 作者名字

- 一定用全名

名字—first name, given name或forename

中间—middle name

姓氏—surname, family name或last name

- 中国人

根据中文惯例按汉语顺序用汉语拼音文字写出，如

He Kaiming, Kaiming He, Kai-ming He, K. M. He, K. He

Deep residual learning for image recognition

K He, X Zhang, S Ren, J Sun - Proceedings of the IEEE ..
openaccess.thecvf.com

Deeper neural networks are more difficult to train. We pres
ease the training of networks that are substantially deeper

☆ 被引用次数：108529 相关文章 »

请收下我的膝盖

二、作者

➢ 作者名字

SCIENCE CHINA
Information Sciences

• RESEARCH PAPER •

December 2021, Vol. 64 222202:1–222202:15
https://doi.org/10.1007/s11432-020-3108-6

Nonlinear output-feedback tracking in multiagent systems with an unknown leader and directed communication

Xinghu WANG[1], Youfeng SU[2] & Dabo XU[3*]

[1]*Department of Automation, University of Science and Technology of China, Hefei* 230027, *China;*
[2]*College of Mathematics and Computer Science, Fuzhou University, Fuzhou* 350116, *China;*
[3]*School of Automation, Nanjing University of Science and Technology, Nanjing* 210094, *China*

二、作者

➢ 作者名字

Contents lists available at ScienceDirect

Automatica

journal homepage: www.elsevier.com/locate/automatica

Structural balance and interpersonal appraisals dynamics: Beyond all-to-all and two-faction networks☆

Wenjun Mei [a,d], Ge Chen [b,*], Noah E. Friedkin [c], Florian Dörfler [d]

[a] Department of Mechanics and Engineering Science, Peking University, Beijing, China
[b] Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China
[c] Department of Sociology, University of California, Santa Barbara, United States of America
[d] Automatic Control Laboratory, ETH Zurich, Switzerland

二、作者

➢ 会员名称

- IEEE--Institute of Electrical and Electronics Engineers(电气与电子工程师协会) [美]
- IRE--Institute of Radio Engineers(无线电工程师协会)[英]

- Student Member，IEEE
- Member，IEEE
- Senior Member，IEEE
- Fellow，IEEE
- Life Fellow，IEEE

二、作者

➢ 会员名称

Design and Analysis of a Novel Permanent Magnet Homopolar Inductor Machine With Mechanical Flux Modulator for Flywheel Energy Storage System

Jiangtao Yang, *Member, IEEE*, Qing Li, *Student Member, IEEE*, Shoudao Huang, *Senior Member, IEEE*, Caiyong Ye, *Member, IEEE*, Ping Liu, *Senior Member, IEEE*, Bo Ma, and Lei Wang, *Senior Member, IEEE*

二、作者

➢ 会员名称

- IEEE--Institute of Electrical and Electronics Engineers(电气与电子工程师协会)[美]
- 例如

  Student Member，IEEE

  Member，IEEE

  Senior Member，IEEE

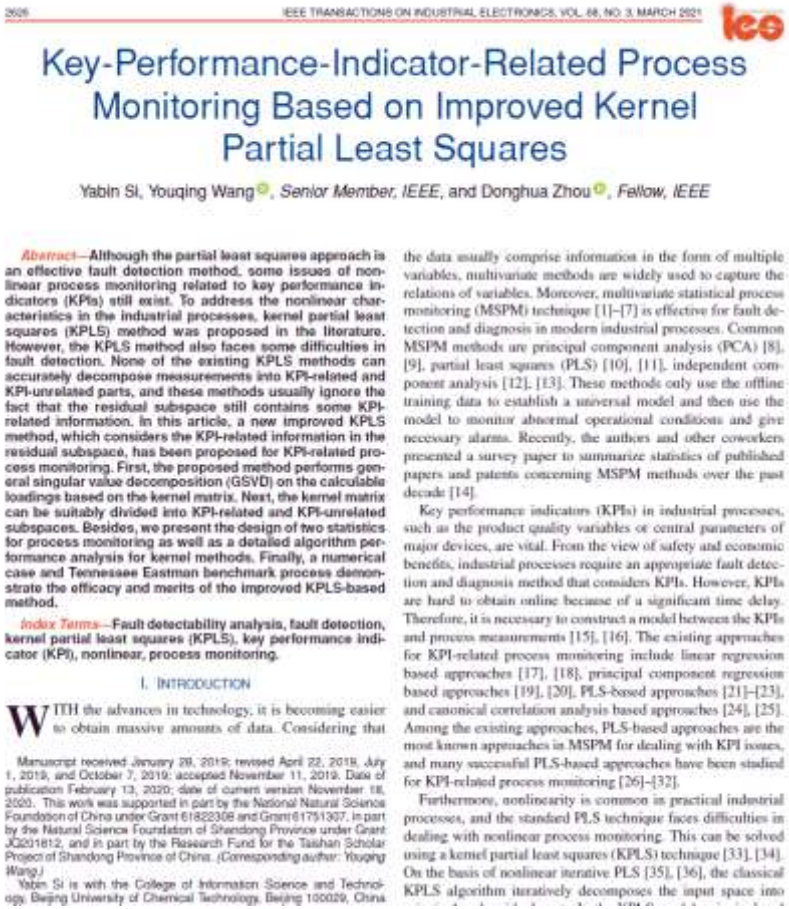
  Fellow，IEEE

  Life Fellow，IEEE

➢ 作者单位

- School of Mechatronic Engineering and Automation， Shanghai University， Shanghai 200444，China
- 有些杂志把工作单位直接标在作者姓名下面，也有不少杂志把工作单位写在论文第1页的脚注。

二、作者



2626 IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, VOL. 68, NO. 3, MARCH 2021

Key-Performance-Indicator-Related Process Monitoring Based on Improved Kernel Partial Least Squares

Yabin Si, Youqing Wang, *Senior Member, IEEE*, and Donghua Zhou, *Fellow, IEEE*

***Abstract*—Although the partial least squares approach is an effective fault detection method, some issues of nonlinear process monitoring related to key performance indicators (KPIs) still exist. To address the nonlinear characteristics in the industrial processes, kernel partial least squares (KPLS) method was proposed in the literature. However, the KPLS method also faces some difficulties in fault detection. None of the existing KPLS methods can accurately decompose measurements into KPI-related and KPI-unrelated parts, and these methods usually ignore the fact that the residual subspace still contains some KPI-related information. In this article, a new improved KPLS method, which considers the KPI-related information in the residual subspace, has been proposed for KPI-related process monitoring. First, the proposed method performs general singular value decomposition (GSVD) on the calculable loadings based on the kernel matrix. Next, the kernel matrix can be suitably divided into KPI-related and KPI-unrelated subspaces. Besides, we present the design of two statistics for process monitoring as well as a detailed algorithm performance analysis for kernel methods. Finally, a numerical case and Tennessee Eastman benchmark process demonstrate the efficacy and merits of the improved KPLS-based method.**

***Index Terms*—Fault detectability analysis, fault detection, kernel partial least squares (KPLS), key performance indicator (KPI), nonlinear, process monitoring.**

I. Introduction

With the advances in technology, it is becoming easier to obtain massive amounts of data. Considering that the data usually comprise information in the form of multiple variables, multivariate methods are widely used to capture the relations of variables. Moreover, multivariate statistical process monitoring (MSPM) technique [1]–[7] is effective for fault detection and diagnosis in modern industrial processes. Common MSPM methods are principal component analysis (PCA) [8], [9], partial least squares (PLS) [10], [11], independent component analysis [12], [13]. These methods only use the offline training data to establish a universal model and then use the model to monitor abnormal operational conditions and give necessary alarms. Recently, the authors and other coworkers presented a survey paper to summarize statistics of published papers and patents concerning MSPM methods over the past decade [14].

Key performance indicators (KPIs) in industrial processes, such as the product quality variables or central parameters of major devices, are vital. From the view of safety and economic benefits, industrial processes require an appropriate fault detection and diagnosis method that considers KPIs. However, KPIs are hard to obtain online because of a significant time delay. Therefore, it is necessary to construct a model between the KPIs and process measurements [15], [16]. The existing approaches for KPI-related process monitoring include linear regression based approaches [17], [18], principal component regression based approaches [19], [20], PLS-based approaches [21]–[23], and canonical correlation analysis based approaches [24], [25]. Among the existing approaches, PLS-based approaches are the most known approaches in MSPM for dealing with KPI issues, and many successful PLS-based approaches have been studied for KPI-related process monitoring [26]–[32].

Furthermore, nonlinearity is common in practical industrial processes, and the standard PLS technique faces difficulties in dealing with nonlinear process monitoring. This can be solved using a kernel partial least squares (KPLS) technique [33], [34]. On the basis of nonlinear iterative PLS [35], [36], the classical KPLS algorithm iteratively decomposes the input space into

Manuscript received January 28, 2019; revised April 22, 2019, July 1, 2019, and October 7, 2019; accepted November 11, 2019. Date of publication February 13, 2020; date of current version November 18, 2020. This work was supported in part by the National Natural Science Foundation of China under Grant 61822308 and Grant 61751307, in part by the Natural Science Foundation of Shandong Province under Grant JQ201812, and in part by the Research Fund for the Taishan Scholar Project of Shandong Province of China. *(Corresponding author: Youqing Wang.)*

Yabin Si is with the College of Information Science and Technology, Beijing University of Chemical Technology, Beijing 100029, China (e-mail: siyabin@163.com).

Youqing Wang is with the Shandong University of Science and Technology, Qingdao 266590, China, and also with the Beijing University of Chemical Technology, Beijing 100029, China (e-mail: wang.youqing@ieee.org).

Donghua Zhou is with the Shandong University of Science and Technology, Qingdao 266590, China (e-mail: zdh@tsinghua.edu.cn).

Color versions of one or more of the figures in this article are available online at https://ieeexplore.ieee.org.

Digital Object Identifier 10.1109/TIE.2020.2972472

二、作者

Contents lists available at ScienceDirect

Automatica

journal homepage: www.elsevier.com/locate/automatica

Distributed adaptive Newton methods with global superlinear convergence☆

Jiaqi Zhang [a], Keyou You [a,*], Tamer Başar [b]

[a] Department of Automation, and BNRist, Tsinghua University, Beijing 100084, China
[b] Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA

ARTICLE INFO

Article history:
Received 13 April 2021
Received in revised form 2 October 2021
Accepted 30 November 2021

ABSTRACT

This paper considers the distributed optimization problem where each node of a peer-to-peer network minimizes a finite sum of objective functions by communicating with its neighboring nodes. In sharp contrast to the existing literature where the fastest distributed algorithms converge either with a global linear or a local superlinear rate, we propose a distributed adaptive Newton (DAN) algorithm

二、作者

➢ 常见问题

知乎
首页
会员
发现
等你来答
美国正式宣布对俄罗斯关闭领空
科研
学术
论文
为什么经常会出现导师和学生抢论文第一作者署名的情况?
按照我的理解，通讯作者才有更高的地位，因为他/她 需要对全文内容负责，而不只是自己参与的那一部分工作。署通讯作者，表明是此工作的指导者和决策者。
似乎国内这种情况尤其多，独立研究组也会出现，是在职称评审上有什么要求吗?
关注者
1,816
被浏览
1,925,015

二、作者

匿名用户

248 人赞同了该回答

查了一圈，觉得必须来说几句。

@笑道人 所说的情况，与我所熟悉的模式大相径庭。但是我仍然赞同他的答案，因为他完美地解释了为何会有导师和学生抢一作。通讯作者在国内地位如此之低，让我大跌眼镜。感谢@笑道人 让我知道这个信息。

根据我的经验，以及刚才我在网上的验证，国际通行做法是不一样的，更接近@金晨羽 和@孙尉翔 的描述。除了按字母排序的情况，**一篇文章的作者中，最有地位的是第一作者和通讯作者。**

第一作者无疑是干活的人，而通讯作者是决策的人，并且对文章负责，他的署名会有特殊标记。一般来说这个人就是导师。**通行做法是导师不管贡献有多大，只要不是一作，名字都放在最后。**所以这又叫 last author。

因此文章的署名，**最重要的是 first author 和 last author**。如果对文章内容有疑问，就找这两个人。

至于国内评职称把二作三作看得比通讯作者重，只能笑而不语了。

二、作者

瑾cici

旅行话题下的优秀答主

553 人赞同了该回答

还有一种偏门情况，有些**坑爹的实验室**论文作者排序按照 **姓！氏！字！母！序！**

许多欧洲lab都是这样，比如做理论的，比如做数据库的（我们lab ）。米国一些做理论的lab也是这样。

真不是我导师跟我抢。多年的习惯了。他姓Gottlob. 我姓Wang。所以按规矩我常年呆在倒数第一的老板专座，别人给我写信经常直接 Professor Wang, 甚至有个人跟我写信问 Professor Wang 是不是可以跟Dr. Gottlob说一下给他发一份测试数据什么的。 （好逆天的一封信）

或许只有毕业前嫁个姓什么Alexander的比较有效。可能嫁个Abington 或者 Aaron 更保险-_-

二、作者

匿名用户

2,620 人赞同了该回答

你以为我想要抢学生的一作吗？你以为我不知道抢学生的一作很丢脸吗？

当初自己在国外读博的时候，哪怕导师贡献的60%都是我一作老板二作。我现在做博导，我一作学生二作我都觉得没脸见自己老师好吗？

但是为什么呢？学校的考评、基金的申请就要看你有多少一作文章。你如果不是一作，他们就要challenge你，说我们无法了解你在这篇文章里面做了多少贡献，也就无法衡量你的水平。然后学校评价学生的时候呢：如果导师一作学生二作，毕业时等同于学生一作处理。所以就是这一整套评价体系逼着我这么干的。

当然，我也是要脸的人。我的姓氏字典序相对靠前。所以目前只能一律字典序，然后文章加注『parallel authorship, equal contribution』了事。这样学生也算并列一作，我也勉强能够有脸见自己当年的导师吧。

二、作者

➢ 常见问题

- 作者?
- 第一作者?
- 通讯作者?
- 共同第一作者?
- 共同通讯作者?
- 同等贡献作者?

nature

26 June 1997 Volume 387 Issue no 6636

Games people play with authors' names

Authorship of a scientific paper is a privilege that is all too easily abused. Attempts to general rules encounter insurmountable obstacles, but individual accountability is un

二、作者

➢ （可能是）史上作者最多的论文

Physics Letters B 688 (2010) 21–42

Contents lists available at ScienceDirect

Physics Letters B

www.elsevier.com/locate/physletb

Charged-particle multiplicities in pp interactions at $\sqrt{s} = 900$ GeV measured with the ATLAS detector at the LHC ☆,☆☆

ATLAS Collaboration

ATLAS Collaboration

G. Aad[48], E. Abat[18a,*], B. Abbott[110], J. Abdallah[11], A.A. Abdelalim[49], A. Abdesselam[117], O. Abdinov[10], B. Abi[111], M. Abolins[88], H. Abramowicz[151], H. Abreu[114], E. Acerbi[89a,89b], B.S. Acharya[162a,162b], M. Ackers[20], D.L. Adams[24], T.N. Addy[56], J. Adelman[173], M. Aderholz[99], C. Adorisio[36a,36b], P. Adragna[75], T. Adye[128], S. Aefsky[22], J.A. Aguilar-Saavedra[123b], M. Aharrouche[81], S.P. Ahlen[21], F. Ahles[48], A. Ahmad[146], H. Ahmed[2], M. Ahsan[40], G. Aielli[132a,132b], T. Akdogan[18a], P.F. Åkesson[29], T.P.A. Åkesson[79], G. Akimoto[153], A.V. Akimov[94], A. Aktas[48], M.S. Alam[1], M.A. Alam[76], J. Albert[167], S. Albrand[55], M. Aleksa[29], I.N. Aleksandrov[65], M. Aleppo[89a,89b], F. Alessandria[89a], C. Alexa[25a], G. Alexander[151], G. Alexandre[49], T. Alexopoulos[9], M. Alhroob[20], M. Aliev[15], G. Alimonti[89a], J. Alison[119], M. Aliyev[10], P.P. Allport[73], S.E. Allwood-Spiers[53], J. Almond[82], A. Aloisio[102a,102b], R. Alon[169], A. Alonso[79], J. Alonso[14], M.G. Alviggi[102a,102b], K. Amako[66], P. Amaral[29], G. Ambrosini[16], G. Ambrosio[89a,a], C. Amelung[22], V.V. Ammosov[127,*], A. Amorim[123a], G. Amorós[165], N. Amram[151], C. Anastopoulos[138], T. Andeen[29], C.F. Anders[48], K.J. Anderson[30], A. Andreazza[89a,89b], V. Andrei[58a], M.-L. Andrieux[55], X.S. Anduaga[70], A. Angerami[34], F. Anghinolfi[29], N. Anjos[123a], A. Annovi[47], A. Antonaki[8], M. Antonelli[47], S. Antonelli[19a,19b], J. Antos[143b], B. Antunovic[41], F. Anulli[131a], S. Aoun[83], G. Arabidze[8], I. Aracena[142], Y. Arai[66], A.T.H. Arce[14], J.P. Archambault[28], S. Arfaoui[29,b], J.-F. Arguin[14], T. Argyropoulos[9], E. Arik[18a,*], M. Arik[18a], A.J. Armbruster[87], K.E. Arms[108], S.R. Armstrong[24], O. Arnaez[4], C. Arnault[114], A. Artamonov[95], D. Arutinov[20], M. Asai[142], S. Asai[153], R. Asfandiyarov[170], S. Ask[82], B. Åsman[144a,144b], D. Asner[28], L. Asquith[77], K. Assamagan[24], A. Astbury[167], A. Astvatsatourov[52], B. Athar[1], G. Atoian[173], B. Aubert[4], B. Auerbach[173], E. Auge[114], K. Augsten[126], M. Aurousseau[4], N. Austin[73], G. Avolio[161], R. Avramidou[9], D. Axen[166], C. Ay[54], G. Azuelos[93,c], Y. Azuma[153], M.A. Baak[29], G. Baccaglioni[89a], C. Bacci[133a,133b], A.M. Bach[14], H. Bachacou[135], K. Bachas[29], G. Bachy[29], M. Backes[49], E. Badescu[25a], P. Bagnaia[131a,131b], Y. Bai[32a], D.C. Bailey[156], T. Bain[156], J.T. Baines[128], O.K. Baker[173], M.D. Baker[24], S. Baker[77], F. Baltasar Dos Santos Pedrosa[29], E. Banas[38], P. Banerjee[93], S. Banerjee[167], D. Banfi[89a,89b], A. Bangert[136], V. Bansal[167], S.P. Baranov[94], S. Baranov[65], A. Barashkou[65], T. Barber[27], E.L. Barberio[86], D. Barberis[50a,50b], M. Barbero[20], D.Y. Bardin[65], T. Barillari[99], M. Barisonzi[172], T. Barklow[142], N. Barlow[27], B.M. Barnett[128], R.M. Barnett[14], A. Baroncelli[133a], M. Barone[47], A.J. Barr[117], F. Barreiro[80], J. Barreiro Guimarães da Costa[57], P. Barrillon[114], V. Bartheld[99], H. Bartko[99], R. Bartoldus[142], D. Bartsch[20], R.L. Bates[53], S. Bathe[24], L. Batkova[143a], J.R. Batley[27], A. Battaglia[16], M. Battistin[29],

提纲

一 标题

二 作者

三 摘要

三、摘要

➢ Abstract--A miniversion of the paper

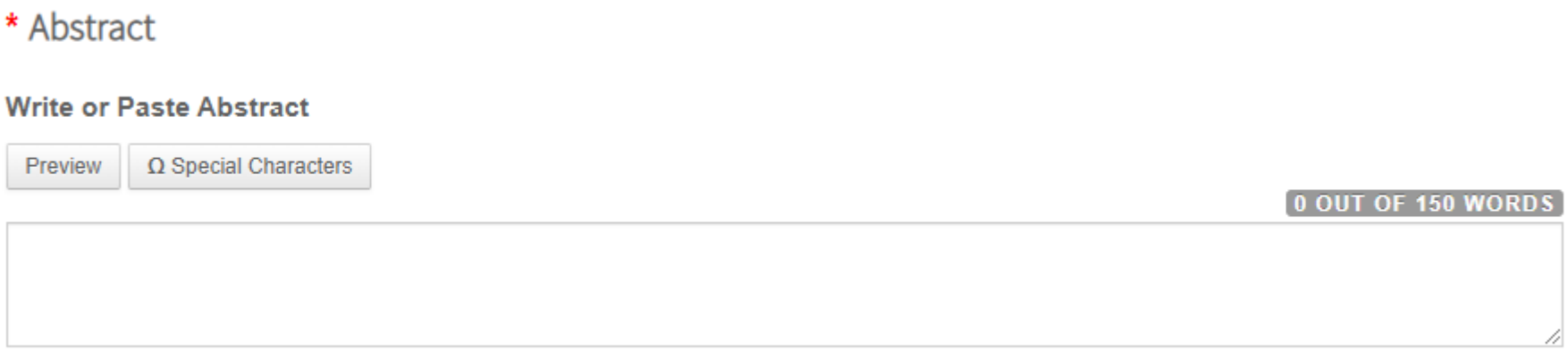
Deep learning and process understanding for data-driven Earth system science

Markus Reichstein[1,2*], Gustau Camps-Valls[3], Bjorn Stevens[4], Martin Jung[1], Joachim Denzler[2,5], Nuno Carvalhais[1,6] & Prabhat[7]

Machine learning approaches are increasingly used to extract patterns and insights from the ever-increasing stream of geospatial data, but current approaches may not be optimal when system behaviour is dominated by spatial or temporal context. Here, rather than amending classical machine learning, we argue that these contextual cues should be used as part of deep learning (an approach that is able to extract spatio-temporal features automatically) to gain further process understanding of Earth system science problems, improving the predictive ability of seasonal forecasting and modelling of long-range spatial connections across multiple timescales, for example. The next step will be a hybrid modelling approach, coupling physical process models with the versatility of data-driven machine learning.

三、摘要

- Abstract--A miniversion of the paper
  - 论文内容的概括性说明，数十或数百字不等；



三、摘要

➢ Abstract--A miniversion of the paper

- 论文内容的概括性说明，数十或数百字不等；
- 主要内容：

  研究的目的与意义

  研究的方法与途径

  研究的成果与结论

In this paper, we propose a novel PM framework using spatiotemporal PCA, where the spatial prior is incorporated to preserve the cause-effect relationship of process variables, and the temporal prior is embedded to maintain the geometric structure of process samples. Moreover, a sparse regularization term is introduced to filter out noise, thereby improving the monitoring performance. In algorithms, an efficient and convergent optimization scheme is developed using the alternating direction method of multipliers (ADMM) in a symmetric Gauss-Seidel (sGS) manner. Finally, the improved monitoring performance is verified on the benchmark Tennessee Eastman (TE) process.

三、摘要

How to construct a *Nature* summary paragraph

Annotated example taken from *Nature* **435**, 114–118 (5 May 2005).

One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarizing the main result (with the words "**here we show**" or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline, may be included in the first paragraph if the editor considers that the accessibility of the paper is significantly enhanced by their inclusion. Under these circumstances, the length of the paragraph can be up to 300 words. (This example is 190 words without the final section, and 250 words with it).

During cell division, mitotic spindles are assembled by microtubule-based motor proteins[1,2]. The bipolar organization of spindles is essential for proper segregation of chromosomes, and requires plus-end-directed homotetrameric motor proteins of the widely conserved kinesin-5 (BimC) family[3]. Hypotheses for bipolar spindle formation include the 'push–pull mitotic muscle' model, in which kinesin-5 and opposing motor proteins act between overlapping microtubules[2,4,5]. However, the precise roles of kinesin-5 during this process are unknown. **Here we show that the vertebrate kinesin-5 Eg5 drives the sliding of microtubules depending on their relative orientation.** We found in controlled *in vitro* assays that Eg5 has the remarkable capability of simultaneously moving at ~20 nm s^{-1} towards the plus-ends of each of the two microtubules it crosslinks. For anti-parallel microtubules, this results in relative sliding at ~40 nm s^{-1}, comparable to spindle pole separation rates *in vivo*[6]. Furthermore, we found that Eg5 can tether microtubule plus-ends, suggesting an additional microtubule-binding mode for Eg5. **Our results demonstrate how members of the kinesin-5 family are likely to function in mitosis, pushing apart interpolar microtubules as well as recruiting microtubules into bundles that are subsequently polarized by relative sliding. We anticipate our assay to be a starting point for more sophisticated *in vitro* models of mitotic spindles. For example, the individual and combined action of multiple mitotic motors could be tested, including minus-end-directed motors opposing Eg5 motility. Furthermore, Eg5 inhibition is a major target of anti-cancer drug development, and a well-defined and quantitative assay for motor function will be relevant for such developments.**

三、摘要

➢ 那些奇葩的摘要

IOP PUBLISHING JOURNAL OF PHYSICS A: MATHEMATICAL AND THEORETICAL
J. Phys. A: Math. Theor. 44 (2011) 492001 (5pp) doi:10.1088/1751-8113/44/49/492001

FAST TRACK COMMUNICATION

Can apparent superluminal neutrino speeds be explained as a quantum weak measurement?

M V Berry[1], N Brunner[1], S Popescu[1] and P Shukla[2]

[1] H H Wills Physics Laboratory, Tyndall Avenue, Bristol BS8 1TL, UK
[2] Department of Physics, Indian Institute of Technology, Kharagpur, India

Received 12 October 2011, in final form 27 October 2011
Published 11 November 2011
Online at stacks.iop.org/JPhysA/44/492001

Abstract
Probably not.

PACS numbers: 03.65.Ta, 03.65.Xp, 14.60.Pq

IEEE TRANSACTIONS ON AUTOMATIC CONTROL, VOL. AC-23, NO. 4, AUGUST 1978

Guaranteed Margins for LQG Regulators

JOHN C. DOYLE

Abstract—There are none.

Bulletin of the
Seismological Society of America

Vol. 64 October 1974 No. 5

IS THE SEQUENCE OF EARTHQUAKES IN SOUTHERN CALIFORNIA, WITH AFTERSHOCKS REMOVED, POISSONIAN?

By J. K. Gardner and L. Knopoff

ABSTRACT

Yes.

三、摘要

➢ 写作要点

- 完整性：有相对独立的结构，保证摘要的完整性和独立可读性；

Abstract—Sparse regression based feature selection method has been extensively investigated these years. However, because it has a non-convex constraint, i.e., $\ell_{2,0}$-norm constraint, this problem is very hard to solve. In this paper, unlike most of the other methods which only solve its slack version by introducing sparsity regularization into objective function forcibly, a novel framework is proposed by us to solve the original $\ell_{2,0}$-norm constrained sparse regression based feature selection problem. We transform our objective function into Linear Discriminant Analysis (LDA) by using a new label coding method, thus enabling our model to calculate the ratio of inter-class scatter to intra-class scatter of features which is the most widely used feature discrimination evaluation metric. According to that ratio, features can be selected by a simple sorting method. The projection gradient descent algorithm is introduced to further improve the performance of our algorithm by using the solution obtained before as its initial solution. This ensures the stability of this iterative algorithm. We prove that the proposed method can get the global optimal solution of this non-convex problem when all features are statistically independent. For the general case where features are statistically dependent, extensive experiments on six small sample size datasets and one large-scale dataset show that our algorithm has comparable or better classification capability comparing with other eight state-of-the-art feature selection methods by the SVM classifier. We also show that our algorithm can obtain a low loss value, which means the solution of our algorithm can get very close to this NP-hard problem's real solution. What is more, because we solve the original $\ell_{2,0}$-norm constrained problem, we avoid the heavy work of tuning the regularization parameter because its meaning is explicit in our method, i.e., the number of selected features. At last, we evaluate the stability of our algorithm from two perspectives, i.e., the objective function values and the selected features, by experiments. From both perspectives, our algorithm shows satisfactory stability performance.

三、摘要

➢ 写作要点

- 简洁性：开门见山，烦言休叙；

***Abstract*—In this paper, a new data-driven fault detection method based on distributed canonical correlation analysis (D-CCA) is proposed to address the plant-wide process monitoring problem. This paper focuses on the distributed plant-wide processes. The core of the proposed method is to reduce uncertainties using correlation information from the neighboring nodes. Furthermore, the cost of the data transmission between network nodes is also reduced by the D-CCA algorithm. When the proposed method and the existing methods are compared using the Tennessee Eastman benchmark process, the false alarm rate, fault detection rate, and the detection delay are comparable. This suggests that the proposed method is feasible.**

三、摘要

➢ 写作要点

- 创新性：列出文章的novelty和contribution；

ABSTRACT

Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input **X**, while principal component analysis (PCA) produces unsupervised decomposition of input **X**. In this paper, the effect of output **Y** on the **X**-space decomposition in PLS is analyzed and geometric properties of the PLS structure are revealed. Several PLS algorithms are compared in a geometric way for the purpose of process monitoring. A numerical example and a case study are given to illustrate the analysis results.

© 2009 Elsevier Ltd. All rights reserved.

三、摘要

➢ 写作要点

- 完整性：有相对独立的结构，保证摘要的完整性和独立可读性；
- 简洁性：开门见山，烦言休叙；
- 创新性：列出文章的novelty和contribution。

然后认真记下来

三、摘要

➢ 注意事项

- 时态常用一般现在时，并注意时态的一致性；

ABSTRACT

Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input **X**, while principal component analysis (PCA) produces unsupervised decomposition of input **X**. In this paper, the effect of output **Y** on the **X**-space decomposition in PLS is analyzed and geometric properties of the PLS structure are revealed. Several PLS algorithms are compared in a geometric way for the purpose of process monitoring. A numerical example and a case study are given to illustrate the analysis results.

© 2009 Elsevier Ltd. All rights reserved.

三、摘要

➢ 注意事项

- 避免在摘要中重复标题文字；

A Distributed Canonical Correlation Analysis-Based Fault Detection Method for Plant-Wide Process Monitoring

Zhiwen Chen, *Member, IEEE*, Yue Cao, *Student Member, IEEE*, Steven X. Ding, Kai Zhang, Tim Koenings, Tao Peng, Chunhua Yang, and Weihua Gui

***Abstract*—In this paper, a new data-driven fault detection method based on distributed canonical correlation analysis (D-CCA) is proposed to address the plant-wide process monitoring problem. This paper focuses on the distributed plant-wide processes. The core of the proposed method is**

NOMENCLATURE

$\mathcal{K}$	Set of the number of subprocesses/nodes.
$\mathcal{K}\backslash\{q\}$	Subset of $\mathcal{K}$ excluding the node q.

三、摘要

➢ 注意事项

- 摘要中也不用图表、方程、结构式等非文字性内容；

Learning from Very Few Samples: A Survey

Jiang Lu, Pinghua Gong, Jieping Ye, *Fellow, IEEE*, Jianwei Zhang, *Member, IEEE*, and Changshui Zhang, *Fellow, IEEE*

Abstract—Few sample learning (FSL) is significant and challenging in the field of machine learning. The capability of learning and generalizing from very few samples successfully is a noticeable demarcation separating artificial intelligence and human intelligence since humans can readily establish their cognition to novelty from just a single or a handful of examples whereas machine learning algorithms typically entail hundreds or thousands of supervised samples to guarantee generalization ability. Despite the long history dated back to the early 2000s and the widespread attention in recent years with booming deep learning technologies, little surveys or reviews for FSL are available until now. In this context, we extensively review 300+ papers of FSL spanning from the 2000s to 2019 and provide a timely and comprehensive survey for FSL. In this survey, we review the evolution history as well as the current progress on FSL, categorize FSL approaches into the generative model based and discriminative model based kinds in principle, and emphasize particularly on the meta learning based FSL approaches. We also summarize several recently emerging extensional topics of FSL and review the latest advances on these topics. Furthermore, we highlight the important FSL applications covering many research hotspots in computer vision, natural language processing, audio and speech, reinforcement learning and robotic, data analysis, etc. Finally, we conclude the survey with a discussion on promising trends in the hope of providing guidance and insights to follow-up researches.

三、摘要

➢ 注意事项

- 时态常用一般现在时，并注意时态的一致性；
- 避免在摘要中重复标题文字；
- 摘要中也不用图表、方程、结构式等非文字性内容。

三、摘要

➢ An Example of Abstract

Abstract—Cyber-physical systems are ubiquitous in power systems, transportation networks, industrial control processes, and critical infrastructures. These systems need to operate reliably in the face of unforeseen failures and external malicious attacks. In this paper: i) we propose a mathematical framework for cyber-physical systems, attacks, and monitors; ii) we characterize fundamental monitoring limitations from system-theoretic and graph-theoretic perspectives; and ii) we design centralized and distributed attack detection and identification monitors. Finally, we validate our findings through compelling examples.

三、摘要

➢ An Example of Abstract

Abstract—Cyber-physical systems are ubiquitous in power systems, transportation networks, industrial control processes, and critical infrastructures. These systems need to operate reliably in the face of unforeseen failures and external malicious attacks. In this paper: i) we propose a mathematical framework for cyber-physical systems, attacks, and monitors; ii) we characterize fundamental monitoring limitations from system-theoretic and graph-theoretic perspectives; and ii) we design centralized and distributed attack detection and identification monitors. Finally, we validate our findings through compelling examples.

➢ 摘要语言特点

- 谓语动词很简单而句子的其余成分却十分复杂；
- 大量使用be(主要用来陈述定义或表示“什么是什么”的陈述句)和have(主要用来叙述事物具有某种或某些特征时用)的变化形式做谓语动词；
- 使用不涉及人的陈述句；

三、摘要

➢ Typical Sentences

- This paper focuses on …
- This paper discusses …
- In this paper, … is presented/studied/investigated.
- This paper is concerned with …
- The purpose/objective of this paper is to …
- It is the aim of this paper to discuss/describe …

三、摘要

➢ Typical Sentences

- In this paper, we introduce/present/consider …
- The approach is based on …
- Conditions are considered for …
- The result of this study can be generalized for …
- The result for … are found to be close to the experimental data.

三、摘要

➢ Typical Words

- 回顾研究背景，常用的词有：review, summarize, present, outline, describe等；
- 阐述写作或研究目的，常用的词有：purpose, attempt, aim 等，也可以用动词不定式充当目的状语；
- 介绍论文的重点内容或研究范围，常用的词有：study, present, include, focus, emphasize, emphasis, attention等；
- 介绍研究或实验过程，常用的词有：test, study, investigate, examine, experiment, discuss, consider, analyze, analysis 等；
- 说明研究或实验方法，常用的词有：measure, estimate, calculate 等；

三、摘要

➢ Typical Words

- 介绍应用、用途，常用的词有：use, apply, application等；
- 展示研究结果，常用的词有：show, result, present等；
- 介绍结论，常用的词有：summary, introduce, conclude等；
- 陈述论文的论点和作者的观点，常用的词有：suggest, report, present, explain, expect, describe等；
- 阐明论证，常用的词有：support, provide, indicate, identify, find, demonstrate, confirm, clarify等；
- 推荐或建议，常用的词有：suggest, suggestion, recommend, recommendation, propose, necessity, necessary, expect等；

三、摘要

➢ 关键词

- key words或key terms(关键词)或index terms(索引词)或subject terms(主题词);
- 关键词一般是名词性的词或词组，个别情况下也有动词性的词或词组，目的是为了提供检索服务;
- 3～8个关键词;
- 排序?

Abstract—Cyber-physical systems are ubiquitous in power systems, transportation networks, industrial control processes, and critical infrastructures. These systems need to operate reliably in the face of unforeseen failures and external malicious attacks. In this paper: i) we propose a mathematical framework for cyber-physical systems, attacks, and monitors; ii) we characterize fundamental monitoring limitations from system-theoretic and graph-theoretic perspectives; and ii) we design centralized and distributed attack detection and identification monitors. Finally, we validate our findings through compelling examples.

Index Terms—Cyber-physical systems, descriptor systems, distributed control, fault detection, geometric control, graph theory, networks, security.

三、摘要

Distributed adaptive convergence☆

Jiaqi Zhang [a], Keyou You [a,*],

[a] Department of Automation, and BNRist, Tsi
[b] Coordinated Science Laboratory, University

ARTICLE INFO

Article history:
Received 13 April 2021
Received in revised form 2 October 2021
Accepted 30 November 2021
Available online 25 January 2022

Keywords:
Distributed optimization
Newton method
Low-rank approximation
Superlinear convergence

A Distributed Can Analysis-Based Fau for Plant-Wide Pr

Zhiwen Chen, *Member, IEEE*, Yue Cao, Kai Zhang, Tim Koenings, Tao Peng

***Abstract*—In this paper, a new data-driven fault detection method based on distributed canonical correlation analysis (D-CCA) is proposed to address the plant-wide process monitoring problem. This paper focuses on the distributed plant-wide processes. The core of the proposed method is to reduce uncertainties using correlation information from the neighboring nodes. Furthermore, the cost of the data transmission between network nodes is also reduced by the D-CCA algorithm. When the proposed method and the existing methods are compared using the Tennessee Eastman benchmark process, the false alarm rate, fault detection rate, and the detection delay are comparable. This suggests that the proposed method is feasible.**

***Index Terms*—Data driven, distributed canonical correlation analysis, fault detection, plant-wide process monitoring.**

Superpixel-Guided Dis Representation of H for Class

Shujun Yang, *Member, IEEE*, Junhui Hou, *Seni*
Shaohui Mei, *Senior Member, IE*

Abstract—In this paper, we propose a novel classification scheme for the remotely sensed hyperspectral image (HSI), namely SP-DLRR, by comprehensively exploring its unique characteristics, including the local spatial information and low-rankness. SP-DLRR is mainly composed of two modules, i.e., the classification-guided superpixel segmentation and the discriminative low-rank representation, which are iteratively conducted. Specifically, by utilizing the local spatial information and incorporating the predictions from a typical classifier, the first module segments pixels of an input HSI (or its restoration generated by the second module) into superpixels. According to the resulting superpixels, the pixels of the input HSI are then grouped into clusters and fed into our novel discriminative low-rank representation model with an effective numerical solution. Such a model is capable of increasing the intra-class similarity by suppressing the spectral variations locally while promoting the inter-class discriminability globally, leading to a restored HSI with more discriminative pixels. Experimental results on three benchmark datasets demonstrate the significant superiority of SP-DLRR over state-of-the-art methods, especially for the case with an extremely limited number of training pixels.

Index Terms—Low-rank, superpixel segmentation, hyperspectral image, classification.

三、摘要

➢ 例子

A Review on Recent Development of Spacecraft Attitude Fault Tolerant Control System

Shen Yin, *Senior Member, IEEE*, Bing Xiao, Steven X. Ding, and Donghua Zhou, *Senior Member, IEEE*

***Abstract*—Motivated by several accidents, attitude control of a spacecraft subject to faults/failures has gained considerable attention in a wider range of aerospace engineering and academic communities. This paper is concerned with industrial practices and theoretical approaches for fault tolerant control (FTC) and fault detection and diagnosis (FDD) in spacecraft attitude control system. An overview on recent development of spacecraft attitude FTC system design is presented. The basis of a FTC system is introduced. The existing engineering FTC techniques and theoretical methodologies, including their advantages and disadvantages, are discussed. Moreover, closely associated with the reliability-relevant issues, recent progress in attitude FTC design strategies is reviewed. A brief review of some open problems in the general area of spacecraft attitude control design subject to components faults/failures is further concluded.**

***Index Terms*—Attitude control system, fault detection and diagnosis (FDD), fault-tolerant control (FTC), spacecraft.**

and controllers. Once a spacecraft is launched, it is highly unlikely that its hardware can be repaired. Hence, any component or system fault/failure cannot be fixed with replacement parts. These issues can potentially cause a host of economic, environmental, and safety problems. This strongly motivates the development of attitude control systems that ensure an efficient and timely response to maintain stability, reliability, and required performance properties even when components fail. In the aerospace industry and academia, fault tolerant control (FTC) [1]–[3] is a widely used technique to accommodate or manage component failures.

In contrast to most conventional control systems that the controllers are designed for fault-free case without considering the possibility of fault occurrence, the main characteristics of systems designed by FTC is that it can guarantee desirable stability and performance properties even in the event of component fault/failure. This is quite important for safety-critical systems,

三、摘要

➢ 例子

Mastering the game of Go without human knowledge

David Silver[1]*, Julian Schrittwieser[1]*, Karen Simonyan[1]*, Ioannis Antonoglou[1], Aja Huang[1], Arthur Guez[1], Thomas Hubert[1], Lucas Baker[1], Matthew Lai[1], Adrian Bolton[1], Yutian Chen[1], Timothy Lillicrap[1], Fan Hui[1], Laurent Sifre[1], George van den Driessche[1], Thore Graepel[1] & Demis Hassabis[1]

A long-standing goal of artificial intelligence is an algorithm that learns, *tabula rasa*, superhuman proficiency in challenging domains. Recently, AlphaGo became the first program to defeat a world champion in the game of Go. The tree search in AlphaGo evaluated positions and selected moves using deep neural networks. These neural networks were trained by supervised learning from human expert moves, and by reinforcement learning from self-play. Here we introduce an algorithm based solely on reinforcement learning, without human data, guidance or domain knowledge beyond game rules. AlphaGo becomes its own teacher: a neural network is trained to predict AlphaGo's own move selections and also the winner of AlphaGo's games. This neural network improves the strength of the tree search, resulting in higher quality move selection and stronger self-play in the next iteration. Starting *tabula rasa*, our new program AlphaGo Zero achieved superhuman performance, winning 100–0 against the previously published, champion-defeating AlphaGo.

如何在顶尖期刊上发表论文?

衣阿华州立大学　Kwan Choi*

本文为当今的学术论文作者提供了一些有用的建议。其目标是“普惠极善”。① 如果你觉得本文有用，请将它推荐给你的朋友们。如果你愿意遵循本文的大多数原则和建议，评上职称或者得到提升的概率就有可能大大增加。如果大多数作者掌握了本文介绍的基本技能，那么他们相互之间竞争的就是思想的真、善、美，而不是技巧的华丽包装。

免责声明：请注意，本文的建议并不一定会提高你的研究论文被采用发表的几率。当你下载或者复制本文时就意味着你同意：当你因采用本文中所提到的建议和原则而产生了间接的、意外的、相关的、失误性的、衍生的、或其他特殊的伤害或损失，本文作者概不负责。

提纲

四 引言

四、引言

Data-Driven Batch-End Quality Modeling and Monitoring Based on Optimized Sparse Partial Least Squares

Qingchao Jiang, *Member, IEEE*, Xuefeng Yan, Hui Yi, and Furong Gao

***Abstract*—Batch-end quality modeling is used to predict the quality by using batch measurements and generally involves a large number of predictor variables. However, not all of the variables are beneficial for the prediction. Conventional multiway partial least squares (PLS) may not function properly for batch-end quality modeling because of many irrelevant predictor variables. This paper proposes an optimized sparse PLS (OSPLS) modeling approach for simultaneous batch-end quality prediction and relevant-variable selection. The effect of irrelevant variables on the quality-prediction performance is analyzed, and the importance of the relevant-variable selection is emphasized. Then, an OSPLS batch-end quality modeling approach is developed by incorporating the variable resolution optimization and sparse PLS modeling. The quality-prediction accuracy and modeling interpretability are improved because only quality-relevant variables are selected, and quality-irrelevant variables are eliminated. Based on the selected quality-relevant variables, a statistic is established for monitoring the quality status. The proposed OSPLS-based modeling and monitoring approach is applied on a fed-batch penicillin fermentation process and an industrial injection molding process. The results are compared with the state-of-the-art methods to verify the effectiveness of the OSPLS approach.**

***Index Terms*—Batch-end quality prediction, batch processes, optimized sparse partial least square (OSPLS), soft sensing, sparse modeling.**

Manuscript received November 4, 2019; revised February 11, 2019, March 15, 2019, and April 26, 2019; accepted June 5, 2019. Date of publication June 19, 2019; date of current version January 3, 2020. This work was supported in part by the National Natural Science Foundation of China under Grant 61603138 and Grant 21878081, in part by the Shanghai Pujiang Program under Grant 17PJD009, in part by the Hong Kong Research Grant Council Project under Grant 16207717, and in part by the Programme of Introducing Talents of Discipline to Universities (the 111 Project) under Grant B17017. (Corresponding author: Xuefeng Yan.)

Q. Jiang and X. Yan are with the Key Laboratory of Advanced Control and Optimization for Chemical Processes of Ministry of Education, East China University of Science and Technology, Shanghai 200237, China (e-mail: qchjiang@ecust.edu.cn; xfyan@ecust.edu.cn).

H. Yi is with the College of Electronic Engineering and Control Science, Nanjing University of Technology, Nanjing 211816, China (e-mail: jsyihui@126.com).

F. Gao is with the Department of Chemical and Biomolecular Engineering, The Hong Kong University of Science and Technology, Hong Kong (e-mail: kefgao@ust.hk).

Color versions of one or more of the figures in this paper are available online at http://ieeexplore.ieee.org.

Digital Object Identifier 10.1109/TIE.2019.2922941

I. Introduction

LARGE portions of value-added products are produced in chemical and pharmaceutical industries by batch processes. Generally, a batch process consists of several phases, and the variables in a batch run are expected to follow a predefined recipe. Due to the variations in environmental conditions, reaction depths, or raw materials, the variable evolution recipe may be deviated, and the final product quality may be unsatisfactory. Thus, timely assessment of the process state and estimation of the final product quality is important [1], [2]. However, the quality variable is generally obtained with some delay because of the technique used or economic limitation. Establishing a soft-sensor model for quality prediction is important. Quality modeling and monitoring techniques are typically classified into two types, namely, mechanism (white-box) models and data-driven (black-box) models [3]–[7]. On the one hand, establishing a mathematic model is difficult because the reaction during a process is generally complex. On the other hand, abundant of history data are stored with the rapid advancement of sensing techniques. Data-driven modeling and monitoring techniques are gaining increasing attention [8]–[13].

Least square (LS) is the basic linear regression method for quality or key-performance-indicator modeling [14]. However, the LS generally fails in dealing with high-dimensional and highly correlated data, because of the regression coefficient stability and computational efficiency problems. To handle high-dimensional and highly correlated data, partial least squares (PLS) is proposed and among the most popular data-driven soft-sensor development methods [15]. For batch processes, the multiway PLS (MPLS) that unfolds the three-way data as two-way data is generally used [16]. However, the following defects of classical MPLS method exist, which may degrade the prediction performance. After data unfolding, the number of predictor variables can be remarkably large, whereas the number of predictor measurements is generally small. For example, in a batch process that has ten variables and 200 measurements in each batch and a set of data with 100 batches, the number of predictor variables is $10 \times 200 = 2000$ while the number of predictor measurements is 100. The number of samples n is much smaller than the number of variables m, this refers to the large m small n problem. Not all predictor variables are beneficial for predicting the final quality; the existence of irrelevant variables may damage useful information and degrade prediction performance. Therefore, it is important to select the relevant variables and eliminate the irrelevant variables in PLS-based modeling.

In PLS-based soft-sensor development, several variable-selection methods are developed, which are categorized into three categories, namely, filter methods, wrapper methods, and embedded methods [17]–[19]. In filter methods, a PLS regression (PLSR) model is first established on the data, then variable selection is performed according to certain rules in evaluating the variable importance. Wrapper methods are computationally expensive because they generally involve double-iterative procedures. The embedded methods perform the selection of variables using a one-iterative procedure, therefore are generally less time consuming than wrapper methods. However, these methods may not function effectively in batch-end quality prediction because of the process complexity and the large m small n problem.

In dealing with the large m small n problem in batch-end quality prediction, representative techniques include the sparse PLS (SPLS) [20] and the multiresolution PLS (MRPLS) [21]. SPLS performs simultaneous regression and selects variables by adding the L_1 penalty term to the optimization objective function of PLS. SPLS produces sparse linear combinations of predictor variables and makes a subtle variable selection. However, the prediction performance will also degrade as the number of quality-irrelevant variable increases. MRPLS performs variable selection by considering the variable time resolution or the time periods. Facco *et al.* highlighted that the quality prediction of PLS can be improved by including time series dynamic information into the modeling. A moving average three-phase PLS estimator was developed for a real-world industrial batch polymerization process [22]. Gins *et al.* discussed the effect of time resolution selection on the prediction performance and proposed a multiresolution quality prediction (MRQP) method [23]. The improved performance is obtained when the structured correlation in time and variable dimensions is considered. More recently, Rato and Reis further extended the MRQP method and proposed an MRPLS modeling method for batch data analysis [21]. The optimal-variable selection is conducted in three dimensions, namely, the variable dimension, the resolution dimension, and the stage dimension. The quality-prediction performance is enhanced because the operational stage dimension is introduced, and more information is available.

The existing MRQP method adjusts the predictor variable dimension by controlling the variable resolution, which effectively avoids high-dimensional optimization. However, the MRQP can only make rough variable selections. For example, optimal resolution of a variable may vary at different production periods. Even in the same production period, the optimal variable resolution can be different. Moreover, the MRQP method selects only one resolution during the entire batch running or an entire operation phase. If too many production periods are separated, then the variable selection becomes much more complex.

Given the aforementioned observations, we study the data-driven batch-end quality modeling and monitoring for batch processes. The novelty and contributions of the current work are as follows.

1) The impact of variable selection on the batch-end quality prediction is analyzed to enhance the basic data-driven batch-end quality modeling and monitoring theory.
2) An optimized SPLS (OSPLS) modeling approach is proposed for efficient batch-end quality prediction. The OSPLS aims to achieve simultaneous quality prediction and relevant-variable selection by optimizing the variable resolution before SPLS modeling through a stochastic optimization approach. The resolution optimization conducts a rough variable selection, whereas the SPLS performs a further subtle variable selection.
3) A monitoring statistic is then established based on the selected quality-relevant variables to identify the difficult-to-measure batch-end quality status.
4) The advantages of the proposed OSPLS modeling scheme are theoretically analyzed. The OSPLS superiority is verified through experimental studies on the simulated fed-batch penicillin fermentation (FBPF) and an industrial injection molding (IIM).

The rest of this paper is organized as follows. Section II reviews the standard MPLS modeling approach and provides a motivational analysis on sparse modeling. Section III details the scheme and discusses the properties of OSPLS-based modeling. The experimental studies on the FBPF process and the IIM process are carried out in Section IV. Finally, Section V concludes this paper.

Notation: The notations used here are standard except where otherwise specified. The superscript "T" represents the transport of vectors or matrices. $|\cdot|$ refers to the absolute value of a scalar. $|\cdot|_1$ and $|\cdot|_2$ represent the L_1 and L_2 norm of vectors, respectively. $\mathrm{corr}(\boldsymbol{X}, \boldsymbol{Y})$ represents the correlation between $\boldsymbol{X}$ and $\boldsymbol{Y}$. $\boldsymbol{\Sigma}_{\boldsymbol{X}} = \mathrm{var}(\boldsymbol{X})$ denotes the variance (covariance) of $\boldsymbol{X}$. $\lfloor a \rfloor$ represents the largest integer less than or equal to a. $\boldsymbol{S}_{\boldsymbol{XY}}$ denotes the estimated covariance (from data) of $\boldsymbol{X}$ and $\boldsymbol{Y}$. $F_\alpha(a, b)$ denotes the F distribution with degrees of freedom a and b, and the level of significance α.

II. Preliminaries and Motivations

The standard MPLS for quality prediction is presented and the effect of irrelevant variables on prediction performance is analyzed. Then, the state-of-the-art SPLS and MRPLS approaches are reviewed, and the areas for improvements are discussed.

A. MPLS Basics

Assume a batch process that has J process sensors to measure process variants, a batch running consists of K sample points, and after a batch running M product-quality variables. After I batches, three-way tensor data consisting of the measured variables $\underline{\boldsymbol{X}}(I \times J \times K)$ and a quality matrix $\boldsymbol{Y}(I \times M)$ are obtained. Obtaining quality variables are generally costly or time consuming. Therefore, the establishment of an estimation model to predict the batch-end product quality is important.

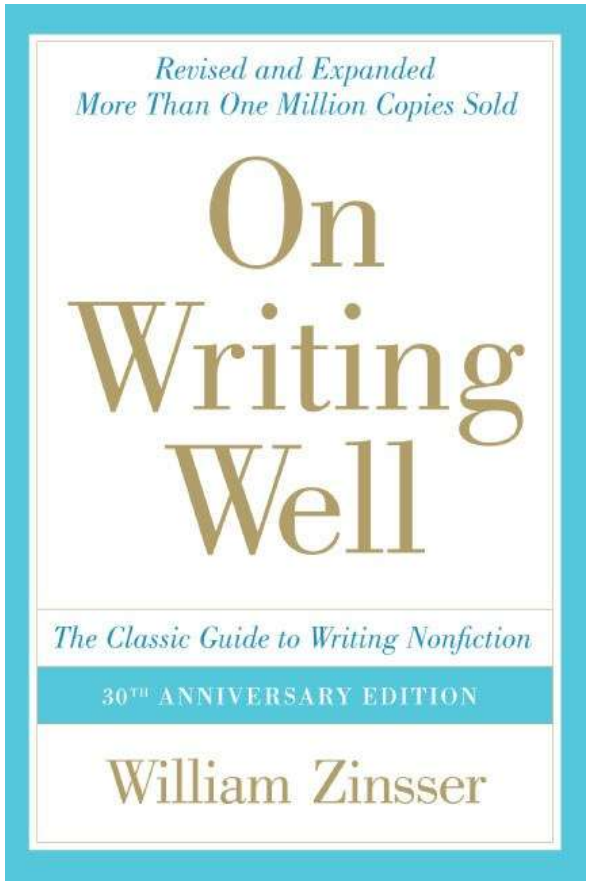
The MPLS was proposed to deal with the three-way data, wherein three-way data are unfolded into two-way data, and then PLS modeling is performed on the two-way data [16]. Several data unfolding methods have been developed. We used the

0278-0046 © 2019 IEEE. Personal use is permitted, but republication/redistribution requires IEEE permission.
See http://www.ieee.org/publications_standards/publications/rights/index.html for more information.

四、引言

The most important sentence in any article is the first one. If it doesn’t induce the reader to proceed to the second sentence, your article is dead. And if the second sentence doesn’t induce him to continue to the third sentence, it’s equally dead.

---- W. Zinsser



四、引言

➢ 如何评价一个Introduction

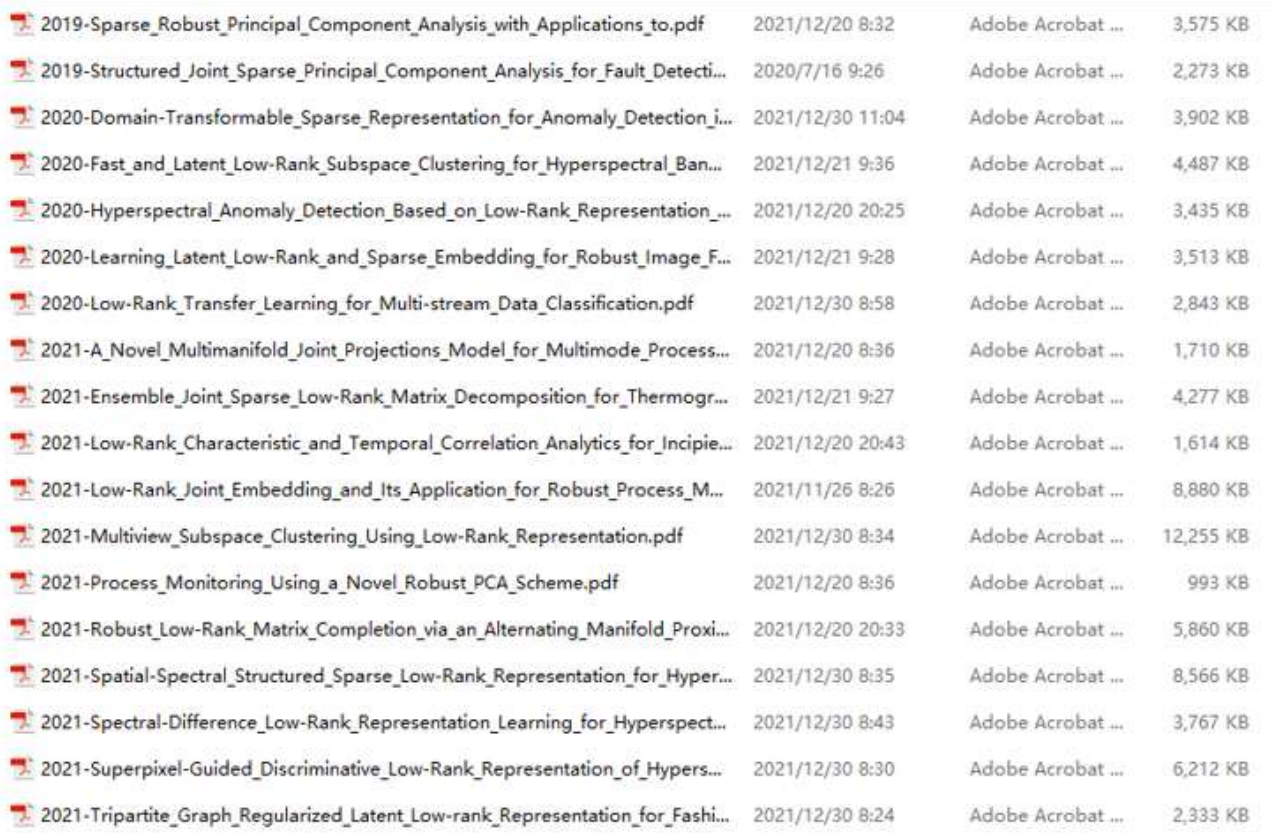
- 一个好的Introduction应该是让读者清晰的了解到论文做的问题是什么？与已有工作比较本文的问题有什么特点？本文得到结果的创新点是什么？应该使读者有想继续往下阅读的冲动。

“某某问题成为最近研究的热点[1-10]. 张三研究了…[1,2,3]，李四研究了…[4,5]，王二麻子研究了…[6-10]. 本文研究….

四、引言

➢ 写不好Introduction的原因

- 不知道Introduction的作用
- 所做的功课不够

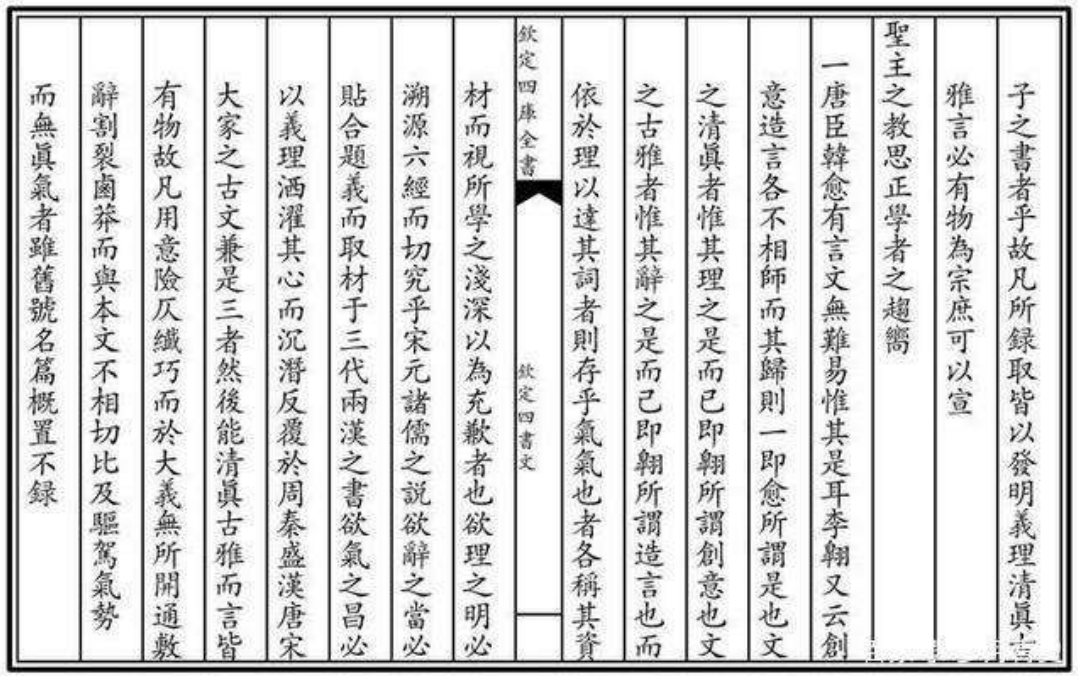


2019-Sparse_Robust_Principal_Component_Analysis_with_Applications_to.pdf	2021/12/20 8:32	Adobe Acrobat ...	3,575 KB
2019-Structured_Joint_Sparse_Principal_Component_Analysis_for_Fault_Detecti...	2020/7/16 9:26	Adobe Acrobat ...	2,273 KB
2020-Domain-Transformable_Sparse_Representation_for_Anomaly_Detection_i...	2021/12/30 11:04	Adobe Acrobat ...	3,902 KB
2020-Fast_and_Latent_Low-Rank_Subspace_Clustering_for_Hyperspectral_Ban...	2021/12/21 9:36	Adobe Acrobat ...	4,487 KB
2020-Hyperspectral_Anomaly_Detection_Based_on_Low-Rank_Representation_...	2021/12/20 20:25	Adobe Acrobat ...	3,435 KB
2020-Learning_Latent_Low-Rank_and_Sparse_Embedding_for_Robust_Image_F...	2021/12/21 9:28	Adobe Acrobat ...	3,513 KB
2020-Low-Rank_Transfer_Learning_for_Multi-stream_Data_Classification.pdf	2021/12/30 8:58	Adobe Acrobat ...	2,843 KB
2021-A_Novel_Multimanifold_Joint_Projections_Model_for_Multimode_Process...	2021/12/20 8:36	Adobe Acrobat ...	1,710 KB
2021-Ensemble_Joint_Sparse_Low-Rank_Matrix_Decomposition_for_Thermogr...	2021/12/21 9:27	Adobe Acrobat ...	4,277 KB
2021-Low-Rank_Characteristic_and_Temporal_Correlation_Analytics_for_Incipie...	2021/12/20 20:43	Adobe Acrobat ...	1,614 KB
2021-Low-Rank_Joint_Embedding_and_Its_Application_for_Robust_Process_M...	2021/11/26 8:26	Adobe Acrobat ...	8,880 KB
2021-Multiview_Subspace_Clustering_Using_Low-Rank_Representation.pdf	2021/12/30 8:34	Adobe Acrobat ...	12,255 KB
2021-Process_Monitoring_Using_a_Novel_Robust_PCA_Scheme.pdf	2021/12/20 8:36	Adobe Acrobat ...	993 KB
2021-Robust_Low-Rank_Matrix_Completion_via_an_Alternating_Manifold_Proxi...	2021/12/20 20:33	Adobe Acrobat ...	5,860 KB
2021-Spatial-Spectral_Structured_Sparse_Low-Rank_Representation_for_Hyper...	2021/12/30 8:35	Adobe Acrobat ...	8,566 KB
2021-Spectral-Difference_Low-Rank_Representation_Learning_for_Hyperspect...	2021/12/30 8:43	Adobe Acrobat ...	3,767 KB
2021-Superpixel-Guided_Discriminative_Low-Rank_Representation_of_Hypers...	2021/12/30 8:30	Adobe Acrobat ...	6,212 KB
2021-Tripartite_Graph_Regularized_Latent_Low-rank_Representation_for_Fashi...	2021/12/30 8:24	Adobe Acrobat ...	2,333 KB

四、引言

➢ 常见写法

三段式：研究背景、现有工作、新的结果


子之書者乎故凡所録取皆以發明義理清眞古
雅言必有物為宗庶可以宣
聖主之教思正學者之趨嚮
一唐臣韓愈有言文無難易惟其是耳李翺又云創
意造言各不相師而其歸則一即愈所謂是也文
之清眞者惟其理之是而已即翺所謂創意也文
之古雅者惟其辭之是而已即翺所謂造言也而
依於理以達其詞者則存乎氣氣也者各稱其資
欽定四庫全書
欽定四書文
材而視所學之淺深以為充歉者也欲理之明必
溯源六經而切究乎宋元諸儒之説欲辭之當必
貼合題義而取材于三代兩漢之書欲氣之昌必
以義理洒濯其心而沉潛反覆於周秦盛漢唐宋
大家之古文兼是三者然後能清眞古雅而言皆
有物故凡用意險仄纖巧而於大義無所開通敷
辭割裂鹵莽而與本文不相切比及驅駕氣勢
而無眞氣者雖舊號名篇概置不録

四、引言

➢ 主要作用

1、引出要研究问题及其背景，让读者认识到问题在理论或应用等方面有意义。

四、引言

- ... has important applications from …[1]-[5], to …[6]-[10]. In the case of …
- … is best known as a classical problem in …[1-5], but has applications to such areas as ….[6-10].
- Recent work in… has drawn attention to …. These arise in problems of … [1], [2], … [5], [6], …[8] and … [10].
- Among many systems of practical interest, … can be modeled as … systems. It is well known that …[1].
- In the … literature, one usually ….[1,2] However, in practice, … cannot be easily …[3]
- These arise in problems of … for … [1], … [2, 3], …[4].

四、引言

➢ 主要作用

2、介绍问题的研究进展，作为一个问题它一定有生长点，即研究前沿，否则问题就不具有创新性。

四、引言

- … is usually viewed as …
- Such an approach therefore introduces
- The … problems which are treated in this paper through … theoretic means have a long mathematical history, independent of control theory, and whose solutions, we believe, are of interest to the contemporary mathematical community.(特别是抽象称比较理论的数学问题时)
- In doing so, we shall necessarily be drawn to the theory of … and to the theory of ….
- Let us begin with, a brief history of the … problem.
- The … problem can be stated as follows: Given a … and an object capable of …, find a ….
- … show that the … often generates inaccurate results [5]. Therefore, … is desirable [6].

四、引言

- … have been previously used in the … context in … [22] and, recently, their ability to represent … has gained appreciation in … analysis [23], [24].
- The use of the … is not a new concept, it has appeared in the context of the stabilization of … systems [25], [26], … control [2]-[5] and, more recently, …problems [20], [27]-[30].
- This class of control laws contains the attitude control law first proposed in [9] as a special case.
- In [15] this was proven to be…. However, in the recently developed extended theory of …[5,17] it was shown that in fact there exist ….
- With the novel use of …, first introduced in [20], this framework allows for robustness analysis with respect to parameter error, signal noise, and external disturbance (such as friction), robustness enhancement by using sliding-mode type of modification [31] and adaptive control [30].

四、引言

➢ 主要作用

3、与已有研究的比较，本文研究的问题有什么不同？特点是什么？

目的是强调本文工作的不同、特点、意义、创新等

四、引言

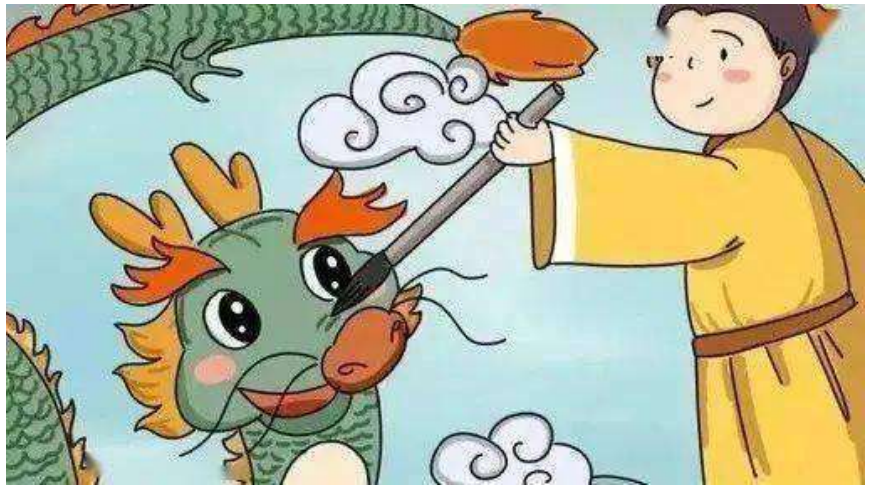
- A complicated Lyapunov analysis is used in [18] to produce a globally asymptotically stable control law that is more complex than the ones presented here.
- Global stability of the controllers in this paper is shown based on … together with a Lyapunov analysis. … As noted in [3], no globally asymptotically stable control law that is also continuous on … exists.
- As pointed out in [3], … feedback control also produces an unstable equilibrium. … This may lead to an undesirable situation where…. We have derived a sufficient condition to avoid this situation.
- Global stability of the control law in [9] is shown here. This control law is computationally efficient and performs almost identically to the globally asymptotically stable control law for small errors.
- In contrast to previous work, our development is completely …; the actual implementation can be done in any … depending on convenience.

四、引言

➢ 主要作用

4、介绍本文得到的结果，强调创新性。

- 若画龙，这是点睛。
- 创新点要自己写明确，不能让读者看完论文后提炼。
- 写时要有底气，底气不足只能说明你自己都不知道有何新意，要想发表更难。



四、引言

- The stability of a large number of control laws is shown in this paper, including··· control. Most of these control laws are new; the ··· control laws in [3], and the ··· control in [4], [5] are special cases of the more general control laws developed here.
- A··· we added in the Lyapunov function is critical for the derivation of the new results in this paper. This technique has been used in ··· control [20] but not in the ··· control literature. The ··· has also been used in [3]-[5], [19], but without ···.
- But more importantly, the paper contains original results and gives new interpretations to old results.
- ···, this paper provides two main contributions. First···. To the best of our knowledge it is the first time such a general result has been reported. We next show···To the best of our knowledge this too is the first time such a result has been reported.

四、引言

- 不宜过多，通常2-4条即可；
- 常用格式如

The main contributions of this paper are given as follows

of industrial processes. The goals of the current work can be summarized as the following four aspects:

1) To construct a robust multivariate statistical PM method by filtering out minor faults.
2) To enhance the representation of process variables using nonconvex regularization.
3) To preserve the local geometric prior via incorporating manifold learning.
4) To develop an iterative optimization strategy along with convergence guarantee.

As such, the main purpose of this paper is to provide satisfactory answers to these three questions. The primary contributions of this paper are highlighted as the following fourfold.

1) The MHE problem is, for the first time, studied for networked time-delay systems subject to the RR scheduling.
2) A lifting method is applied to reformulate the time-delay system into a delay-free system.
3) A sufficient condition is established under which the estimation error is ultimately bounded.
4) Two optimization problems (OPs) are addressed to obtain the desired estimator parameters according to two different estimation performance requirements.

四、引言

➢ 主要作用

5、给出论文的内容安排。

- The rest of this paper is organized as follows. Section II provides …. Section III presents … Some simulation results are given in Section IV.
- The paper is organized as follows: Section 2 introduces basic assumptions, includes … considered. A … is presented in Section 3. The … and the … are the main topic of Sections 4 and 5, respectively. Section 6 illustrates simulation results. Conclusions are given in Section 7.

四、引言

The rest of this article is organized as follows. Section II reviews the basis of multimanifold learning. Section III presents the proposed MMJP model. in Section IV, the corresponding process monitoring scheme based on MMJP is introduced. Section V presents two case studies on a numerical example as well as the TE benchmark process. Finally, Section VI concludes this article.

四、引言

➢ 注意事项：文献引用

- 应引用“最相关”的文献以指引读者. 力戒刻意回避引用最重要的相关文献(甚至是对作者研究具有某种“启示”性意义的文献)；
- 避免不恰当地大量引用作者本人的文献；

！！！审稿人：Some related methods are missing in the current version. For example。。。

REFERENCES

[1] A. Alessandri and M. Gaggero, “Fast moving horizon state estimation for discrete-time systems using single and multi iteration descent methods,” *IEEE Trans. Autom. Control*, vol. 62, no. 9, pp. 4499–4511, Sep. 2017.

[2] A. Alessandri, M Baglietto, and G. Battistelli, “Robust receding-horizon estimation for uncertain discrete-time linear systems,” *Syst. Control Lett.*, vol. 54, no. 7, pp. 627–643, Jul. 2005.

[3] A. Alessandri and M. Awawdeh, “Moving-horizon estimation with guaranteed robustness for discrete-time linear systems and measurements subject to outliers,” *Automatica*, vol. 67, pp. 85–93, May 2016.

[4] R. Caballero-Águila, A. Hermoso-Carazo, and J. Linares-Pérez, “Optimal state estimation for networked systems with random parameter matrices, correlated noises and delayed measurements,” *Int. J. General Syst.*, vol. 44, no. 2, pp. 142–154, Feb. 2015.

[5] D. Ding, Z. Wang, B. Shen, and H. Dong, “$\mathcal{H}_\infty$ state estimation with fading measurements, random varying nonlinearities and probabilistic distributed delays,” *Int. J. Robust Nonlinear Control*, vol. 25, no. 13, pp. 2180–2195, Sep. 2015.

四、引言

➢ 注意事项：名词解释

- 解释或定义专门术语或缩写词，以帮助编辑、审稿人和读者阅读与理解；

Index Terms—Data driven, degradation process, remaining useful life (RUL).

I. Introduction

SAFETY and reliability is the primary concern of modern industrial production. In order to ensure safety and reliability, techniques such as multivariate statistic process control (MSPC) have been widely used [1]. Different kinds of MSPC methods have been proposed in the literature in the past few years, such as canonical variate analysis (CVA) [2], canonical correlation analysis (CCA) [3], [4], probabilistic latent variable model [5], [6], and quality-related MSPC approaches [7], [8]. Despite the aforementioned progress, principal component anal-

Acronyms

AIC	Akaike information criterion.
BM	Brownian motion.
CM	Condition monitoring.
FHT	First hitting time.
MLE	Maximum likelihood estimation.
MSE	Mean squared error.
PDF	Probability density function.
PHM	Prognostics and health management.

四、引言

➢ 注意事项：人称

- 适当地使用“We”或“Our”，“This paper”等词，以明确地指示作者本人的工作；如

We conducted this study to determine whether…

This paper presents a new approach that process the data more efficiently.

Summarizing the discussions above, in this paper, we aim to deal with the MHE problem for time-delay systems with the RR protocol scheduling. This is a nontrivial task because of the following three identified difficulties:

Motivated by the above works, in this paper, we propose a non-negative sparse hyper-Laplacian regularized low-rank representation model, or NSHLRR for short, for image

四、引言

➢ 注意事项：时态

- 现在时：叙述有关现象或普遍事实；

little is known about…

- 现在完成时：描述最近的某种趋势，或者强调表示某些“最近”发生的事件对现在的影响；

few studies have been done on …

- 一般过去时：叙述过去特定行为或特定现象；

found that reducing the amount of …

四、引言

➢ 注意事项：时态

- 现在时：叙述有关现象或普遍事实；
- 现在完成时：描述最近的某种趋势，或者强调表示某些“最近”发生的事件对现在的影响；
- 一般过去时：叙述过去特定行为或特定现象；

The LRR method [11], [30], [31], [33] focuses on low-rank data representation, based on the hypothesis that data approximately jointly span several low-dimensional subspaces. The authors of [32] generalize LRR model to take care of largely contaminated outliers by incorporating a ℓ_1/ℓ_2 noise model and prove that under mild technical conditions, the LRR model exactly recovers the subspace of samples and detect the outliers as well. Thus LRR can accurately recover the row space of the original data and detect outliers under mild conditions [30]. In general, the resulting problem, which minimizes a combination of the nuclear norm and the ℓ_1-norm, is convex and can be solved in polynomial time [10]. In order to handle the cases where the number of observed data is insufficient or data themselves are too badly corrupted, Liu and Yan [33] further proposed a latent low-rank representation approach. In the latent LRR, hidden data can be regarded as the input data matrix after being transposed. This idea has been recently used in designing a classifier for image classification [4]. As for LRR, only the

四、引言

➢ 注意事项：论文结构

- 也有一些期刊不要求，如TII、TIE、TAC

The contribution and benefits of the proposed method are as follows.

1) SJSPCA is introduced to enhance fault-isolation performance of conventional PCA based approaches.
2) SJSPCA uses graph Laplacian regularization term that is able to incorporate *a priori* information on variable structure/correlation, so that faulty variables that are correlated can be effectively isolated.
3) By using a moving window based approach, a two-stage fault-isolation strategy is proposed for online application.
4) It is proved that the proposed strategy is capable of isolating faulty variables.
5) The "smearing effect" can be remarkably reduced.

II. JOINT SPARSE PCA

Notations: $\mathbb{R}^n$ and $\mathbb{R}^{n\times m}$ denote, respectively, the n-dimensional Euclidean space and set of all $n \times m$ real matrices. $\mathbb{N}$ ($\mathbb{N}^+, \mathbb{N}^-$) denote, respectively, the set of integers (nonnegative integers and negative integers), and the set of all nonnegative real numbers is denoted by $\mathbb{R}^+$. The notation $X \geq Y$ ($X > Y$), where X and Y are real symmetric matrices, means that $X - Y$ is positive semidefinite (positive definite). M^T represents the transpose of the matrix M. If A is a matrix, $\lambda_{max}\{A\}$ ($\lambda_{min}\{A\}$) stands for the maximum (minimum) eigenvalue of A, and $\mathrm{tr}\{A\}$ represents the trace of A. 0 represents the zero matrix of compatible dimensions. The n-dimensional identity matrix is denoted as I_n or simply I, if no confusion is caused. The shorthand $\mathrm{diag}\{\cdots\}$ stands for a block-diagonal matrix and the notation $\mathrm{diag}_n\{\bullet\}$ is employed to stand for $\mathrm{diag}\{\underbrace{\bullet,\ldots,\bullet}_{n}\}$. $\mathbb{E}\{x\}$ and $\mathbb{E}\{x|y\}$ will, respectively, denote expectation of the stochastic variable x and expectation of x conditional on y. Given a generic vector x, $\|x\|$ describes the Euclidean norm of x and, for a given positive definite matrix P, $\|x\|_P$ denotes the weighted norm of x : $\|x\|_P \triangleq \sqrt{x^T Px}$. In symmetric block matrices, "*" is used as an ellipsis for terms induced by symmetry. For an integer a and a positive integer b, the function $\mathrm{mod}(a, b)$ represents the unique nonnegative remainder on division of the integer a by the positive integer b. The Kronecker delta function

四、引言

➢ 常用表达

- 以however, few, little和no等表示指出过去研究的不足或目前仍缺少某些资料，并引出作者的研究问题；
- 以although, while引导，或以but, yet转折的复合句来提出问题；
- 有时作者在引言中还可较谦虚的，或者试探性的指出自己研究的价值，其中常用的助动词有may, should, could等；

- However, few studies have been done on …
- Although much research has been done on…, little work has been done on…
- These findings may be useful to researchers attempting to increase employee productivity…

四、引言

➢ 总结

- Choose references carefully and seriously;
- Keep exposition flowing smoothly and logically;
- Much of is should be written in the present tense;
- Do not keep the reader in suspense.

A bad beginning makes a bad ending.

四、引言

➢ 例子

Our program, AlphaGo Zero, differs from AlphaGo Fan and AlphaGo Lee[12] in several important aspects. First and foremost, it is trained solely by self-play reinforcement learning, starting from random play, without any supervision or use of human data. Second, it uses only the black and white stones from the board as input features. Third, it uses a single neural network, rather than separate policy and value networks. Finally, it uses a simpler tree search that relies upon this single neural network to evaluate positions and sample moves, without performing any Monte Carlo rollouts. To achieve these results, we introduce a new reinforcement learning algorithm that incorporates lookahead search inside the training loop, resulting in rapid improvement and precise and stable learning. Further technical differences in the search algorithm, training procedure and network architecture are described in Methods.

提纲

五 方法

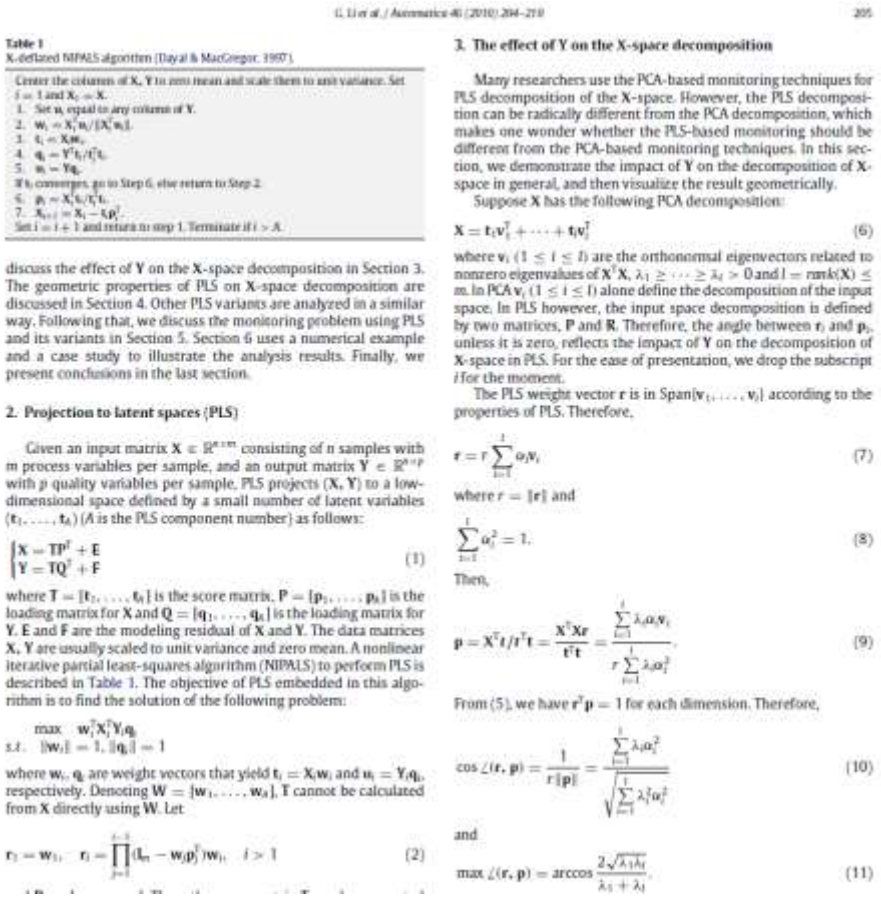
六 结果

七 结论

五、方法

➢ 内容

- 应清楚、准确描述是如何获得研究结果的；
- 对方法的描述要详略得当、重点突出；



G. Li et al. / Automatica 46 (2010) 204–210 205

Table 1
X-deflated NIPALS algorithm (Dayal & MacGregor, 1997).

Center the columns of $\mathbf{X}$, $\mathbf{Y}$ to zero mean and scale them to unit variance. Set $i = 1$ and $\mathbf{X}_0 = \mathbf{X}$.
1. Set $\mathbf{u}_i$ equal to any column of $\mathbf{Y}$.
2. $\mathbf{w}_i = \mathbf{X}_{i-1}^T\mathbf{u}_i/\|\mathbf{X}_{i-1}^T\mathbf{u}_i\|$.
3. $\mathbf{t}_i = \mathbf{X}_{i-1}\mathbf{w}_i$.
4. $\mathbf{q}_i = \mathbf{Y}^T\mathbf{t}_i/\mathbf{t}_i^T\mathbf{t}_i$.
5. $\mathbf{u}_i = \mathbf{Y}\mathbf{q}_i$.

If $\mathbf{t}_i$ converges, go to Step 6, else return to Step 2.
6. $\mathbf{p}_i = \mathbf{X}_{i-1}^T\mathbf{t}_i/\mathbf{t}_i^T\mathbf{t}_i$.
7. $\mathbf{X}_{i+1} = \mathbf{X}_i - \mathbf{t}_i\mathbf{p}_i^T$.

Set $i = i + 1$ and return to step 1. Terminate if $i > A$.

discuss the effect of $\mathbf{Y}$ on the $\mathbf{X}$-space decomposition in Section 3. The geometric properties of PLS on $\mathbf{X}$-space decomposition are discussed in Section 4. Other PLS variants are analyzed in a similar way. Following that, we discuss the monitoring problem using PLS and its variants in Section 5. Section 6 uses a numerical example and a case study to illustrate the analysis results. Finally, we present conclusions in the last section.

2. Projection to latent spaces (PLS)

Given an input matrix $\mathbf{X} \in \mathbb{R}^{n\times m}$ consisting of n samples with m process variables per sample, and an output matrix $\mathbf{Y} \in \mathbb{R}^{n\times p}$ with p quality variables per sample, PLS projects $(\mathbf{X}, \mathbf{Y})$ to a low-dimensional space defined by a small number of latent variables $(\mathbf{t}_1, \ldots, \mathbf{t}_A)$ (A is the PLS component number) as follows:

$$\begin{cases}\mathbf{X} = \mathbf{T}\mathbf{P}^T + \mathbf{E} \\ \mathbf{Y} = \mathbf{T}\mathbf{Q}^T + \mathbf{F}\end{cases} \tag{1}$$

where $\mathbf{T} = [\mathbf{t}_1, \ldots, \mathbf{t}_A]$ is the score matrix, $\mathbf{P} = [\mathbf{p}_1, \ldots, \mathbf{p}_A]$ is the loading matrix for $\mathbf{X}$ and $\mathbf{Q} = [\mathbf{q}_1, \ldots, \mathbf{q}_A]$ is the loading matrix for $\mathbf{Y}$. $\mathbf{E}$ and $\mathbf{F}$ are the modeling residual of $\mathbf{X}$ and $\mathbf{Y}$. The data matrices $\mathbf{X}$, $\mathbf{Y}$ are usually scaled to unit variance and zero mean. A nonlinear iterative partial least-squares algorithm (NIPALS) to perform PLS is described in Table 1. The objective of PLS embedded in this algorithm is to find the solution of the following problem:

$$\begin{aligned}&\max \quad \mathbf{w}_i^T\mathbf{X}_i^T\mathbf{Y}_i\mathbf{q}_i \\ &s.t. \quad \|\mathbf{w}_i\| = 1,\ \|\mathbf{q}_i\| = 1\end{aligned}$$

where $\mathbf{w}_i$, $\mathbf{q}_i$ are weight vectors that yield $\mathbf{t}_i = \mathbf{X}_i\mathbf{w}_i$ and $\mathbf{u}_i = \mathbf{Y}_i\mathbf{q}_i$, respectively. Denoting $\mathbf{W} = [\mathbf{w}_1, \ldots, \mathbf{w}_A]$, $\mathbf{T}$ cannot be calculated from $\mathbf{X}$ directly using $\mathbf{W}$. Let

$$\mathbf{r}_1 = \mathbf{w}_1, \quad \mathbf{r}_i = \prod_{j=1}^{i-1}(\mathbf{I}_m - \mathbf{w}_j\mathbf{p}_j^T)\mathbf{w}_i, \quad i > 1 \tag{2}$$

3. The effect of Y on the X-space decomposition

Many researchers use the PCA-based monitoring techniques for PLS decomposition of the $\mathbf{X}$-space. However, the PLS decomposition can be radically different from the PCA decomposition, which makes one wonder whether the PLS-based monitoring should be different from the PCA-based monitoring techniques. In this section, we demonstrate the impact of $\mathbf{Y}$ on the decomposition of $\mathbf{X}$-space in general, and then visualize the result geometrically.

Suppose $\mathbf{X}$ has the following PCA decomposition:

$$\mathbf{X} = \mathbf{t}_1\mathbf{v}_1^T + \cdots + \mathbf{t}_l\mathbf{v}_l^T \tag{6}$$

where $\mathbf{v}_i$ $(1 \le i \le l)$ are the orthonormal eigenvectors related to nonzero eigenvalues of $\mathbf{X}^T\mathbf{X}$, $\lambda_1 \ge \cdots \ge \lambda_l > 0$ and $l = \mathrm{rank}(\mathbf{X}) \le m$. In PCA $\mathbf{v}_i$ $(1 \le i \le l)$ alone define the decomposition of the input space. In PLS however, the input space decomposition is defined by two matrices, $\mathbf{P}$ and $\mathbf{R}$. Therefore, the angle between $\mathbf{r}_i$ and $\mathbf{p}_i$, unless it is zero, reflects the impact of $\mathbf{Y}$ on the decomposition of $\mathbf{X}$-space in PLS. For the ease of presentation, we drop the subscript i for the moment.

The PLS weight vector $\mathbf{r}$ is in $\mathrm{Span}\{\mathbf{v}_1, \ldots, \mathbf{v}_l\}$ according to the properties of PLS. Therefore,

$$\mathbf{r} = r\sum_{i=1}^{l}\alpha_i\mathbf{v}_i \tag{7}$$

where $r = \|\mathbf{r}\|$ and

$$\sum_{i=1}^{l}\alpha_i^2 = 1. \tag{8}$$

Then,

$$\mathbf{p} = \mathbf{X}^T\mathbf{t}/\mathbf{t}^T\mathbf{t} = \frac{\mathbf{X}^T\mathbf{X}\mathbf{r}}{\mathbf{t}^T\mathbf{t}} = \frac{\sum_{i=1}^{l}\lambda_i\alpha_i\mathbf{v}_i}{r\sum_{i=1}^{l}\lambda_i\alpha_i^2}. \tag{9}$$

From (5), we have $\mathbf{r}^T\mathbf{p} = 1$ for each dimension. Therefore,

$$\cos\angle(\mathbf{r}, \mathbf{p}) = \frac{1}{r\|\mathbf{p}\|} = \frac{\sum_{i=1}^{l}\lambda_i\alpha_i^2}{\sqrt{\sum_{i=1}^{l}\lambda_i^2\alpha_i^2}} \tag{10}$$

and

$$\max\angle(\mathbf{r}, \mathbf{p}) = \arccos\frac{2\sqrt{\lambda_1\lambda_l}}{\lambda_1 + \lambda_l}. \tag{11}$$

五、方法

➢ 内容

- 应清楚、准确描述是如何获得研究结果的；
- 对方法的描述要详略得当、重点突出；

所有必要的细节（以便他人能够重复）；

Data availability

The data that support the plots within this paper and other findings of this study are available from the corresponding authors upon reasonable request.

Code availability

All the code or mathematical algorithm files within this paper are available from the corresponding authors upon reasonable request.

Article

Methods

Sample growth

A water-soluble SAO layer was grown first on a (001) STO single-crystalline substrate (MTI Corp.) followed by the growth of STO and PTO by a DCA Dual R450 Oxide MBE system. The SAO and STO films were grown with an oxidant (10% O_3 and 90% O_2) background pressure P_{O_2} of 1×10^{-6} torr and at $T_{substrate}$ = 950 °C in a layer-by-layer growth mode, of which the thickness was monitored by reflection high-energy electron diffraction oscillations. The PTO films were grown with an oxidant (distilled O_3) P_{O_2} of 2×10^{-5} torr and at $T_{substrate}$ = 625 °C. Owing to the volatility of lead, PTO films were grown in adsorption-controlled mode with a fixed lead:titanium flux ratio of 13:1, and the thickness was controlled by the shutter time of titanium evaporation source.

Structure characterizations

The crystal structure was examined by a high-resolution four-circle X-ray diffractometer using a Bruker D8 Discover instrument. The incident X-ray is from Cu K_α emission and has a wavelength of 1.5418 Å.

Selected area electron diffraction and S/TEM experiments

Selected area electron diffraction patterns were acquired on an FEI Tecnai F20 TEM at 200 kV from a flat area of the samples suspended on holey carbon films or microcarbon grids. A low electron beam current (0.045 nA) and a short exposure time (2.0 s) were used to reduce the electron beam damage. The probe convergence angle on Titan was 25 mrad, and the angular range of the HAADF detector was from 79.5 mrad to 200 mrad.

五、方法

- 写作要点Be Precise, be careful.

- 明确描述实验对象和方法的选择；

Minor comments:

Page III, Section III, Page 3, Right Column, Lines 34-35"... Notice that the inverses of some matrices only need to be calculated once in the iterations, so the overall computational complexity is acceptable...". This is a strong statement that needs to be given emphasis since it relates to the overall computational complexity.

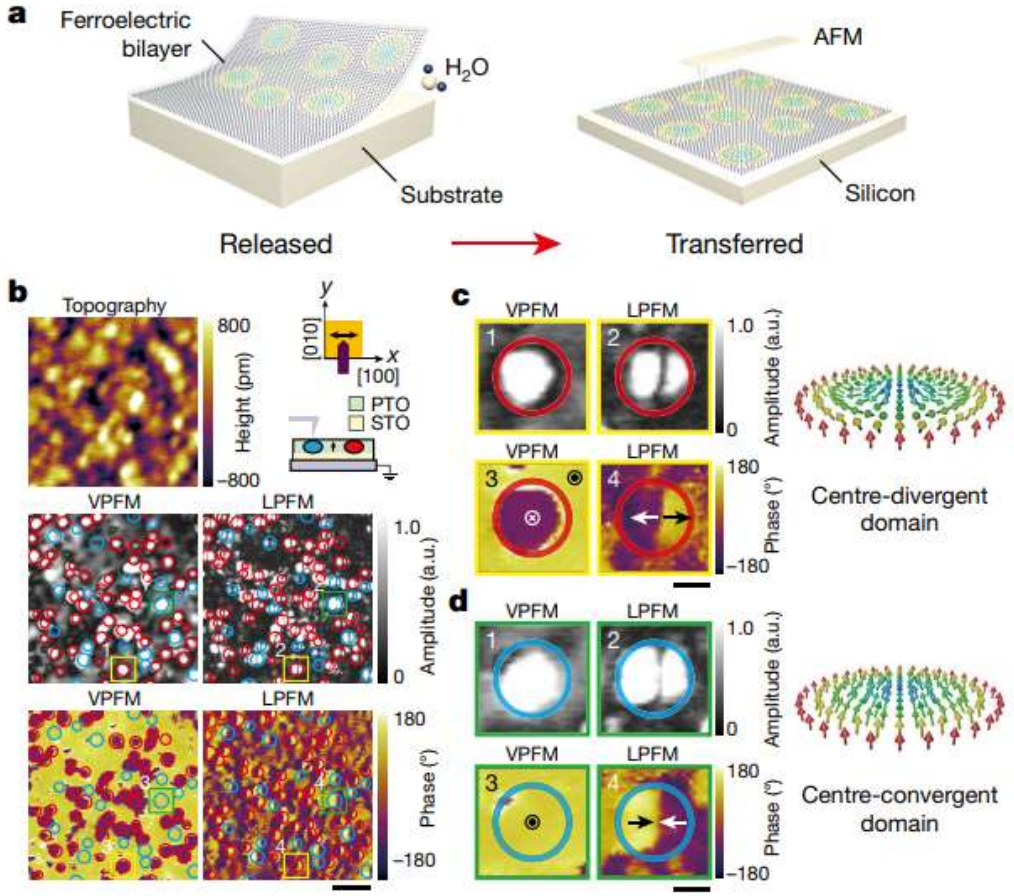
Page V, Section IV, Page 5, Left Column, Lines 34-36 "... the local geometric manifold structure of fault samples can be captured and preserved, thereby making the monitoring more robust to corruptions..." the robust to corruptions should have a basis and it needs to be briefly mentioned such as in a phrase or a short sentence.

五、方法

➢ 写作要点Be Precise, be careful.

- 明确描述实验对象和方法的选择；
- 详细描述实验方法和实验步骤；

How,
How much,
What conditions,
…



五、方法

➢ 写作要点Be Precise, be careful.

- 明确描述实验对象和方法的选择；
- 详细描述实验方法和实验步骤；
- 准确记载所采用药物和化学试剂的名称、剂量、给药途径；

6.1. A numerical example

Consider the following numerical example first:

$$\begin{cases} \mathbf{x}_k = \mathbf{A}\mathbf{z}_k + \mathbf{e}_k \\ y_k = \mathbf{C}\mathbf{x}_k + v_k \end{cases} \tag{32}$$

where $\mathbf{A} = \begin{pmatrix} 1 & 4 & 4 \\ 2 & 0 & 1 \end{pmatrix}^{\mathrm{T}}$, $\mathbf{z}_k \sim \mathbf{N}(\mathbf{0}, 0.5^2\mathbf{I}_2)$, $\mathbf{e}_k \sim \mathbf{N}(0, 0.05^2\mathbf{I}_3)$, $v_k \sim N(0, 0.05^2)$, $\mathbf{C} = \begin{pmatrix} 2 & 2 & 1 \end{pmatrix}$. The fault is added in the following form:

$$\mathbf{x}_k = \mathbf{x}_k^* + \Xi f \tag{33}$$

ARTICLES

nature biotechnology

DNA-guided genome editing using the *Natronobacterium gregoryi* Argonaute

Feng Gao[1], Xiao Z Shen[1], Feng Jiang[1], Yongqiang Wu[1] & Chunyu Han[1]

The RNA-guided endonuclease Cas9 has made genome editing a widely accessible technique. Similar to Cas9, endonucleases from the Argonaute protein family also use oligonucleotides as guides to degrade invasive genomes. Here we report that the *Natronobacterium gregoryi* Argonaute (NgAgo) is a DNA-guided endonuclease suitable for genome editing in human cells. NgAgo binds 5′ phosphorylated single-stranded guide DNA (gDNA) of ~24 nucleotides, efficiently creates site-specific DNA double-strand breaks when loaded with the gDNA. The NgAgo–gDNA system does not require a protospacer-adjacent motif (PAM), as does Cas9, and preliminary characterization suggests a low tolerance to guide-target mismatches and high efficiency in editing (G+C)-rich genomic targets.

韩春雨事件的时间线：

2016年5月8日，多家媒体以一鸣惊人为题，先后报道韩春雨的论文成果；**2016年5月27日**，首个声称未能重复韩春雨实验的帖子在未名空间BBS出现，作者据称来自中科院上海分院；**2016年7月13日**，韩春雨当选为河北省科协副主席，并在当月被河北科大推荐为"长江学者奖励计划"候选人。

五、方法

➢ 写作要点Be Precise, be careful.

- 明确描述实验对象和方法的选择；
- 详细描述实验方法和实验步骤；
- 准确记载所采用药物和化学试剂的名称、剂量、给药途径；
- 列举建立方法的参考文献，并做简要描述（但不需全部重复描述）；

4. Experiments

We compare the following methods in the multi-view learning setting, focusing on several downstream tasks: noisy digit image classification, speech recognition, and word pair semantic similarity.

DNN-based models, including SplitAE, CorrAE, DCCA, DCCAE, and DistAE.

Linear CCA (CCA), corresponding to DCCA with only a linear network without hidden layers for both views.

Kernel CCA approximations. Exact KCCA is intractable for our tasks; we instead implement two kernel approximation techniques, using Gaussian RBF kernels. The first implementation, denoted **FKCCA**, uses random Fourier features (Lopez-Paz et al., 2014) and the second implementation, denoted **NKCCA**, uses the Nyström approximation (Williams & Seeger, 2001). As described in Sec. 3.2, in FKCCA/NKCCA we transform the original inputs to an M-dimensional feature space where the inner products between samples approximate the kernel similarities (Yang et al., 2012). We apply linear CCA to the transformed inputs to obtain the approximate KCCA solution.

五、方法

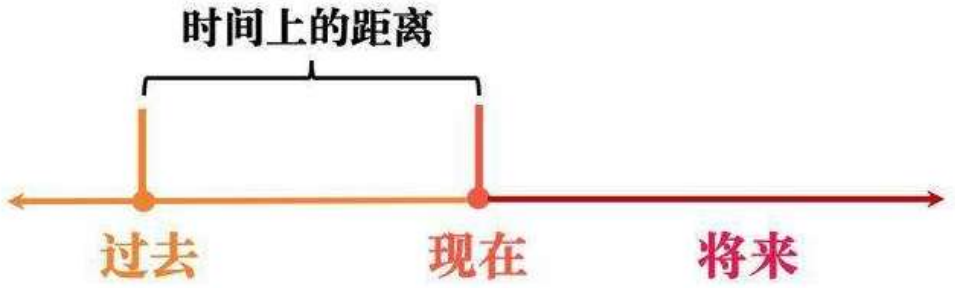
➢ 时态

- 现在时：不受时间影响的事实；

A twin-lens reflex camera is actually a combination of …

- 过去时：过去特定的行为或事件；

The work was carried out on the Imperial College gas atomizer, which has been described in detail elsewhere.



五、方法

➢ 语态

- 由于所涉及的行为与材料是讨论的重点，且读者已知道进行这些行为的人就是作者，因而一般采用被动语态；

The samples were immersed in an ultrasonic bath for 3 minutes in acetone followed by 10 minutes in distilled water. (建议使用)

We immersed the samples in an ultrasonic bath for 3 minutes in acetone followed by 10 minutes in distilled water. (避免使用)

五、方法

➢ 语态

- 如果涉及表达作者的观点或看法，则应采用主动语态或不定式结构；

For the second trial, the apparatus was covered by a sheet of plastic. We believed this modification would reduce the amount of scattering. (建议使用)

For the second trial, the apparatus was covered by a sheet of plastic. It was believed that this modification would reduce the amount of scattering.(建议使用)

五、方法

➢ 例子

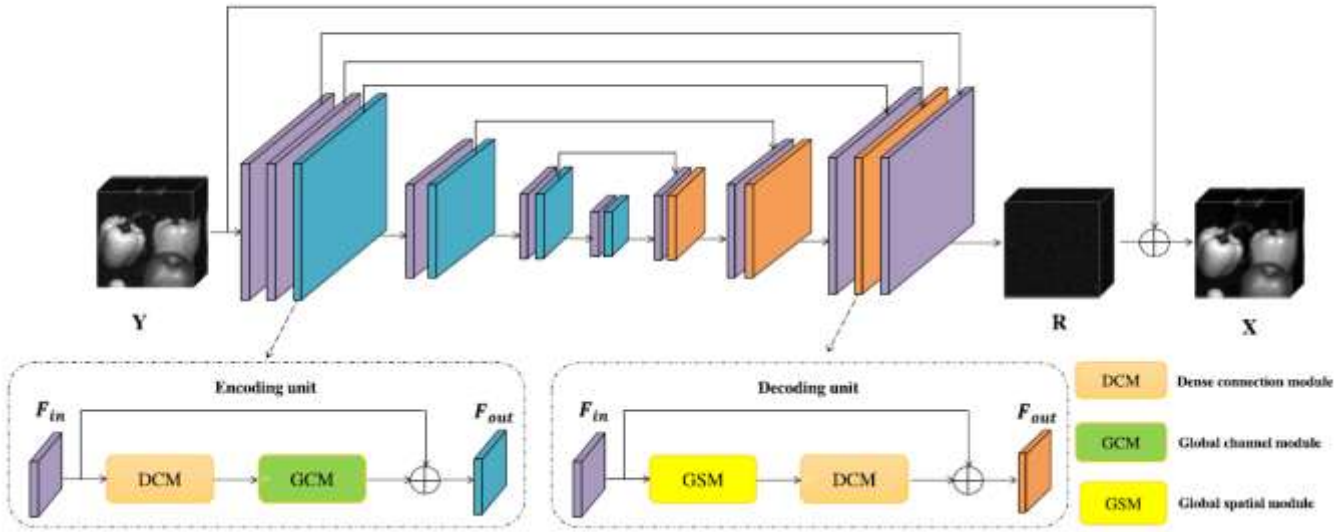


Fig. 1. Overall architecture of our global reasoning network for HSI denoising. The network consists of encoding and decoding units. The encoding unit contains the DCM and the GCM, while the decoding unit contains the GSM and the DCM.

A. Overall Network Architecture

The proposed network adopts the U-net architecture [37] as the backbone, and the advantages of the U-net are three folds: First, the skip connections in U-net allow the restored feature map in the decoding stage to contain more low-level features and promotes gradient back-propagation, which make

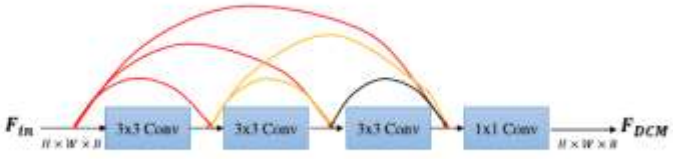


Fig. 2. Architecture of DCM.

五、方法

- 例子

4 Methodology

As it has already been discussed, our approach builds on ideas from the areas of pose extraction and domain adaptation. We now give some technical details regarding: (a) the extraction of skeletal joint information from video; (b) the representation used for capturing spatial and temporal properties of the aforementioned information during the performance of some activity; (c) the classification approach we follow; and finally, (d) the adversarial domain adaptation we propose.

4.1 Classification

As it has been already mentioned, for human activity recognition tasks human motion is typically captured by depth cameras, which extract both RGB video and depth maps per video frame, i.e. an extra video channel where the value of each pixel is related to the depth of the corresponding object to the image plane. Our approach utilizes the modality that corresponds to the motion of joints in 3D space. More specifically, we require as input 3D trajectories of skeletal joints (i.e. x, y and z coordinates at each frame for each) during an action.

We work with 3D skeletal data that have been captured with the Microsoft Kinect v2 sensor. These data consist of 25 human joints per skeleton. The set of skeletal joints is illustrated in Fig. 2. Up to 6 skeletons can be simultaneously extracted in real-time using the Kinect SDK. Therein, a human skeleton corresponds to a graph; nodes correspond to body parts such as arms, legs, head, neck and so on, while edges follow the body structure. Moreover, a parent-child relationship is implied. For example, the joint "HEAD" is parent of "NECK," while the "NECK" is the

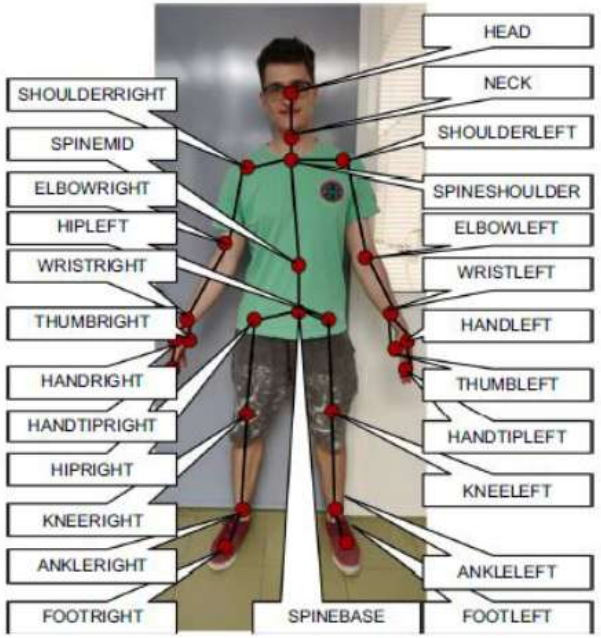


Fig. 2 Extracted human skeleton 3D joints using the Kinect SDK

提纲

五 方法

六 结果

七 结论

六、结果

➢ 要点

- 对实验或观察结果的表达要高度概括和提炼（按逻辑顺序描述或总结重要的观察结果）；
- 数据表达可采用文字与图表相结合的形式（凡用文字能说明的问题，就尽量不用图表在复述；不要同时用表和图重复同一数据）；

Automatica 138 (2022) 110156

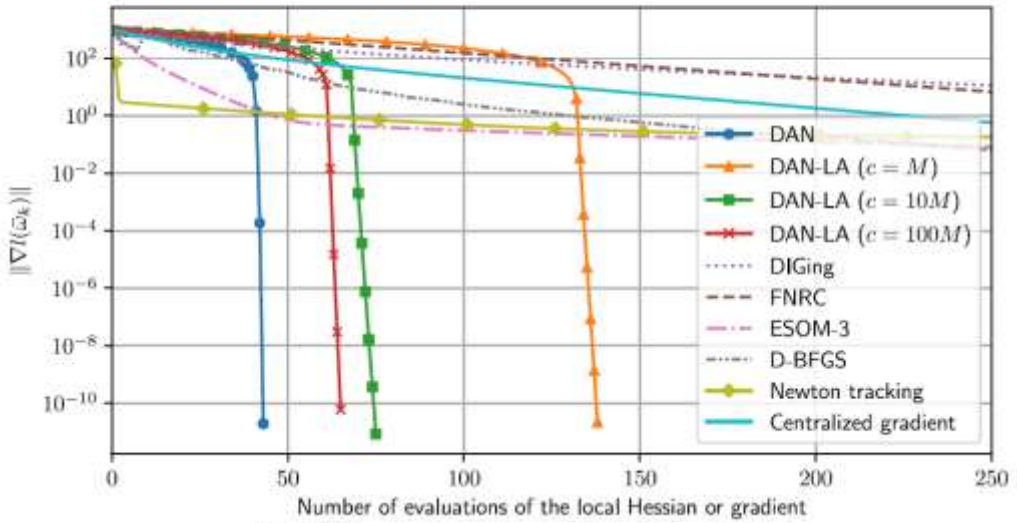


TABLE III

PERFORMANCE COMPARISON OF ALL THE COMPETING METHODS IN THE COMPLEX NOISE CASE ON THE ICVL DATA SET. THE BEST AND THE SECOND BEST RESULTS ARE BOLDFACED AND UNDERLINED, RESPECTIVELY

	Noisy HSI	LRMR [17]	LRTV [11]	TDL [14]	NGMeet [26]	NMoG [18]	E3DTV [41]	LRTDTV [22]	HSI-DeNet [27]	HSID-CNN [28]	Ours
						case 1					
PSNR	17.90	29.05	31.94	28.55	29.19	33.64	33.12	39.15	39.57	39.60	**40.28**
SSIM	0.145	0.529	0.867	0.470	0.572	0.788	0.883	0.948	0.971	0.973	**0.983**
SAM	1.008	0.516	0.094	0.528	0.582	0.098	0.179	0.217	0.110	0.114	**0.076**
						case 2					
PSNR	17.65	29.04	31.94	27.56	28.97	34.60	33.18	38.70	39.42	39.61	**40.58**
SSIM	0.138	0.530	0.867	0.442	0.566	0.807	0.885	0.945	0.970	0.973	**0.984**
SAM	1.007	0.515	0.100	0.538	0.584	0.098	0.296	0.213	0.115	0.117	**0.073**
						case 3					
PSNR	17.60	28.37	31.47	26.67	28.29	34.26	32.65	37.30	38.76	38.64	**40.24**
SSIM	0.139	0.516	0.867	0.431	0.564	0.821	0.885	0.933	0.974	0.972	**0.984**
SAM	1.024	0.535	0.119	0.569	0.605	0.117	0.233	0.212	0.114	0.119	**0.075**

六、结果

➢ 要点

- 对实验或观察结果的表达要高度概括和提炼（按逻辑顺序描述或总结重要的观察结果）；
- 数据表达可采用文字与图表相结合的形式（凡用文字能说明的问题，就尽量不用图表在复述；不要同时用表和图重复同一数据）；
- 尽可能列出结果的原始数据，而不能只报道统计处理后的数据（为帮助读者理解，可适当评论原始数据，对结果的说明、解释，与理论模型或他人结果的比较等）；

6. Numerical examples

In this section, we test DAN and DAN-LA by training a binary logistic regression classifier for the Covertype dataset from the UCI machine learning repository (Dheeru & Karra Taniskidou, 2017), where the samples in Classes 3 and 7 are used. The optimization problem involved has the following form:

$$\min.\ l(\omega) \triangleq -\sum_{i=1}^{m} y_i \ln \sigma(z_i) + (1-y_i)\ln(1-\sigma(z_i)) + \frac{\rho}{2}\|\omega\|^2$$

where $\omega \in \mathbb{R}^{55}$ and $m = 56264$ is the number of samples; $z_i = \omega^{\mathsf{T}}\mathbf{x}_i$ where $\mathbf{x}_i \in \mathbb{R}^{55}$ is the feature of the ith sample with each entry normalized to $[-1, 1]$, and $y_i \in \{0, 1\}$ is the corresponding label. The regularization parameter is chosen as $\rho = 0.01m$. The gradient and Hessian are respectively $\nabla l(\omega) = \sum_{i=1}^{m} \mathbf{x}_i(\sigma(z_i)-y_i)+r\omega$ and $\nabla^2 l(\omega) = \sum_{i=1}^{m} \mathbf{x}_i\mathbf{x}_i^{\mathsf{T}}\sigma(z_i)(1-\sigma(z_i))+rI$.

For distributed training, we randomly partition the dataset over $n = 10$ or $n = 100$ nodes with each one privately holding a local subset. We compare our algorithms with the four second-order methods: FNRC (Varagnolo et al., 2016), ESOM-3 (Mokhtari et al., 2016), Newton tracking (Zhang et al., 2021), D-BFGS (Eisen et al., 2017), and a first-order method: DIGing (Nedić et al., 2017). An undirected communication network is constructed by adopting the Erdős–Rényi model (Erdős & Rényi, 1960), i.e., each pair of nodes is connected with probability $2\ln n/n$. For comparison, the edge weights are generated by the Metropolis method (Nedić et al., 2017; Shi et al., 2015).

六、结果

➢ 要点

- 对实验或观察结果的表达要高度概括和提炼（按逻辑顺序描述或总结重要的观察结果）；
- 数据表达可采用文字与图表相结合的形式（凡用文字能说明的问题，就尽量不用图表在复述；不要同时用表和图重复同一数据）；
- 尽可能列出结果的原始数据，而不能只报道统计处理后的数据（为帮助读者理解，可适当评论原始数据，对结果的说明、解释，与理论模型或他人结果的比较等）；

Data + Figures + Tables！

6. Numerical examples

In this section, we test DAN and DAN-LA by training a binary logistic regression classifier for the Covertype dataset from the UCI machine learning repository (Dheeru & Karra Taniskidou, 2017), where the samples in Classes 3 and 7 are used. The optimization problem involved has the following form:

$$\min.\ l(\omega) \triangleq -\sum_{i=1}^{m} y_i \ln \sigma(z_i) + (1-y_i)\ln(1-\sigma(z_i)) + \frac{\rho}{2}\|\omega\|^2$$

where $\omega \in \mathbb{R}^{55}$ and $m = 56264$ is the number of samples; $z_i = \omega^{\mathsf{T}}\mathbf{x}_i$ where $\mathbf{x}_i \in \mathbb{R}^{55}$ is the feature of the ith sample with each entry normalized to $[-1, 1]$, and $y_i \in \{0, 1\}$ is the corresponding label. The regularization parameter is chosen as $\rho = 0.01m$. The gradient and Hessian are respectively $\nabla l(\omega) = \sum_{i=1}^{m} \mathbf{x}_i(\sigma(z_i)-y_i)+r\omega$ and $\nabla^2 l(\omega) = \sum_{i=1}^{m} \mathbf{x}_i\mathbf{x}_i^{\mathsf{T}}\sigma(z_i)(1-\sigma(z_i))+rI$.

For distributed training, we randomly partition the dataset over $n = 10$ or $n = 100$ nodes with each one privately holding a local subset. We compare our algorithms with the four second-order methods: FNRC (Varagnolo et al., 2016), ESOM-3 (Mokhtari et al., 2016), Newton tracking (Zhang et al., 2021), D-BFGS (Eisen et al., 2017), and a first-order method: DIGing (Nedić et al., 2017). An undirected communication network is constructed by adopting the Erdős–Rényi model (Erdős & Rényi, 1960), i.e., each pair of nodes is connected with probability $2\ln n/n$. For comparison, the edge weights are generated by the Metropolis method (Nedić et al., 2017; Shi et al., 2015).

六、结果

➢ 时态

- 现在时：对研究结果的说明或由其得出的一般性推论，不同结果之间的比较；

These results agree well with the findings of Smith…

- 过去时：所叙述结果的内容为关于过去的事实；

After flights of less than two hours, 11% of the army pilots and 33% of the civilian pilots reported back pain.

6.1.3. Summary on the numerical example

The comparison of detection rates for faults in both S_y and S_r is not included due to page limitation, which has a similar result to the case study in the next subsection.

For all nonzero fault magnitudes, fault detection rates also reflect missing alarm rates. Further, the detection rates for zero fault magnitude correspond to the false alarm rates. From Tables 3 and 4, it can be observed that the false alarm rates for three policies are nearly the same.

六、结果

➢ 讨论

- 重点在于对研究结果的解释和推断，并说明作者的结果是否支持或反对某种观点、是否提出了新的问题或观点等；
- 撰写讨论时要避免含蓄，尽量做到直接、明确，以便审稿人和读者了解论文为什么值得引起重视；

In summary, for both KPI-related and KPI-unrelated faults, KPI-KPLS provided correct KPIs information, whereas MKPLS gave wrong alarms. It is clear that KPI-KPLS is more effective because it covers accurate scenarios of KPIs, which are unavailable in industrial processes. From this point of view, the criterion in [34] and the criterion in this article can be used to analyze the T^2 statistic. The details are presented in Table VII, where n_y is the number of samples for which the statistics exceeded their thresholds, n_t is the number of all fault samples, $\surd$ represents that the listed inequality is satisfied, and $\times$ represents that the listed inequality is unsatisfied. From the criterion in [34], if $n_y/n_t > 10\%$, the fault would be a KPI-related fault; and if the window size $w \geq 10\%n_t$, the KPI-related fault would be a short-lived KPI-related fault. Applying these criteria, KPI-KPLS accurately categorized faults, whereas MKPLS gave wrong indications from Table VII.

六、结果

➢ 讨论什么内容

- 回顾研究的主要目的或假设，并探讨所得到的结果是否符合原来的期望？如果没有的话，为什么？
- 概述最重要的结果，并指出其能否支持先前的假设以及是否与其他学者的结果一致？如果不一致，为什么？
- 对结果提出说明、解释或猜测；根据这些结果，能得出何种结论或推论？
- 指出研究的局限性以及这些局限对研究结果的影响，并建议进一步的研究题目或方向；
- 指出结果的理论意义(支持或反驳相关领域中现有的结论，对现有理论的修正)和实际应用；

六、结果

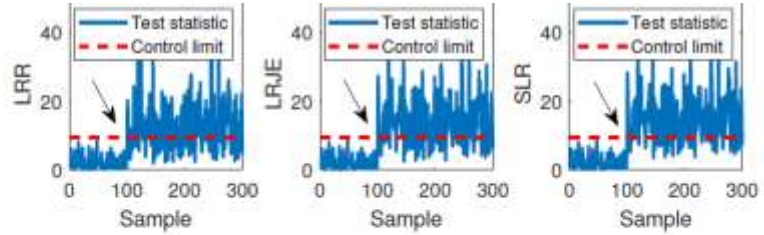


Fig. 2. Monitoring performance of T^2 test statistic for Case II.

it continuously. This suggests that minor faults and noise are difficult to detect. In contrast, the proposed SLR is able to obtain more samples that exceed the control limit, which indicates that its monitoring performance is better.

Case II simulates a step change that occurs in a hidden variable. Compared with Case I, the fault slightly affects SPE test statistic, but largely affects T^2 test statistic. Thus, only the monitoring results of T^2 test statistic are displayed in Fig. 2. It is concluded that Case II is more difficult to detect since all six methods fail to detect this fault at the 101st sample. Even so, the proposed SLR can detect more fault samples, which verifies that the proposed method is much more promising.

As shown in Fig. 10, fault scores from T^2 statistics in SJSPCA identified variables v_6, v_7, and v_8 as faulty as they are significantly greater than zero. Similar isolation results can be observed for SPE statistics. On the other hand, both the contribution plots of T^2 and SPE statistics successfully identified v_7, v_8 as faulty, however, it is difficult to identify v_6 as faulty, since the contribution of v_6 is small. Considering that v_6, v_7, v_8 are CO_2, CO, H_2 concentrations measured by the same device, also later findings confirmed that a fault occurs in the gas concentration measurement device, it can be concluded that fault-isolation results obtained by SJSPCA are correct.

Figs. 11 and 12 further present the aggregated fault scores using PCA and SJSPCA. These results confirmed the previous observation that SJSPCA-based approach successfully identified the three gas concentrations as faulty, whereas PCA-based contribution plot did not isolate v_6 as faulty.

六、结果

➢ 常用表达

- 在讨论中应选择适当的词汇来区分推测与事实；

prove, demonstrate等表示作者坚信观点的真实性；

show, indicate, found等表示作者对问题的答案有某些不确定性；

imply, suggest等表示推测；

can, will, should, probably, may, could, possibly等情态动词来表示论点的确定性程度；

六、结果

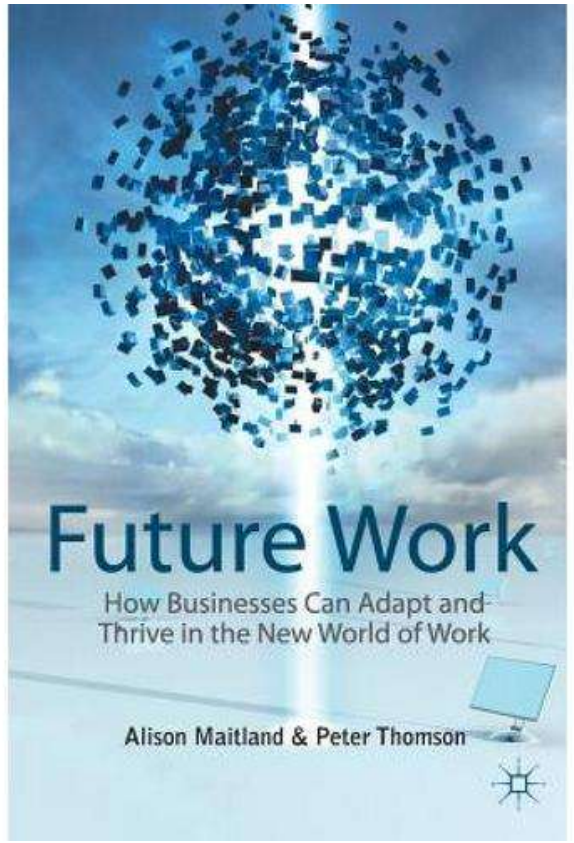
➢ 常用表达

- 建议新的题目或进一步研究方向时，常使用现在时动词，有时在动词前加情态动词would, could 或表示更强烈建议的should；

It would be interesting to learn why oxygen is depleted during this type of sputtering.

- 若提及自己正在进行或拟将进行的相关研究，用现在时或将来时，第一人称做主语；

In the future, we will investigate the effect of using an oxygen ambient.



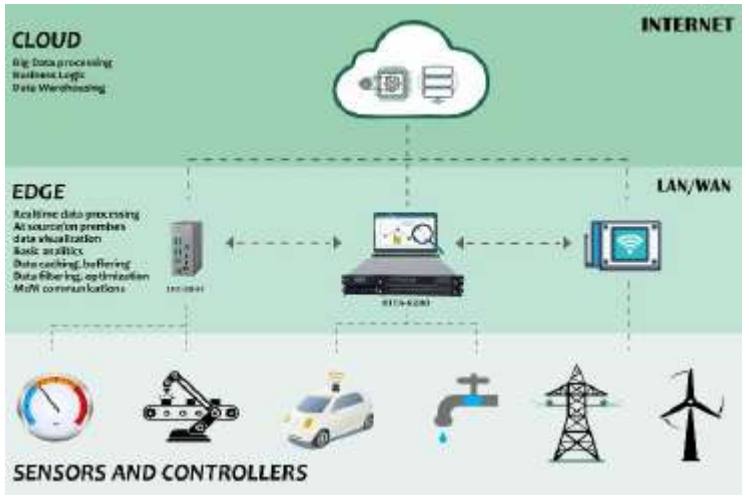
六、结果

➢ 常用表达

- 表达结果的理论意义或实际应用，多使用现在时，并辅以may, might或should（表示对自己研究的价值非常肯定）；

The results of this study may lead to the development of effective methods for teaching grammar to language immersion students.

The technique presented in this paper should be useful in reducing the amount of sludge in wastewater from semiconductor plants.



六、结果

➢ 例子

6. Discussions, generalizations and applications

6.1. Insights from Noether's theorem

The celebrated Noether's theorem (Neuenschwander, 2011) states that every differentiable symmetry of a group action on a physical system is associated with a corresponding conservation law. In special cases, two well-established conclusions on symmetry and conservation laws could be briefly stated as (i) symmetry under translations implies conservation of linear momentum, and (ii) symmetry under rotations implies conservation of angular momentum. In our definitions of the linear momentum and angular momentum for networked control systems, they are defined as *overall* quantities relating to the sum of individual momentum quantity over all agents. Thus, one can derive a multi-agent version of conservation laws in the light of Noether's theorem. We should emphasize that the *symmetry* in the context of distributed coordination control of networked systems comes from the following two aspects:

- The *invariance* of a predefined potential function under certain group actions, which enables one to calculate the *infinitesimal generator* corresponding to the group action along each agent's evolution;
- The *undirected* graph topology modelling the interactions between neighbouring agents, which allows one to adopt *gradient-based controllers* for a multi-agent coordination control problem (e.g., (5)).

We now show new proofs for generalizations of Theorems 1 and 2 in a much more general sense, with insights gained from the relation between symmetry and conservation laws. The main ideas are based on the fact that a shape potential function for formation control or coordination control, such as the one defined in (4), is invariant under translation/rotation group actions to all agents. The proofs also involve the calculation of infinitesimal generators of group actions associated with translations or rotations. We refer the readers to Bullo and Lewis (2004, Chapter 5.4) for several versions of theorem statements on *invariance under actions and infinitesimal generators*. In the following analysis, we assume that

$$\dot{p}_1 + \dot{p}_2 + \cdots + \dot{p}_n = 0 \tag{22}$$

and this proves the conservation of the overall linear momentum (or equivalently, the invariance of the formation centroid) for a coordination control system in the form $\dot{p} = -\nabla_p V$ derived from more general potential functions. □

It is clear that the formation potential function in (4) is invariant under translation action, and the gradient-based formation system can be derived from this potential under an undirected graph topology. The above proof also incorporates previous proofs reported in e.g. Garcia de Marina et al. (2016a), Krick et al. (2009), Oh & Ahn (2014) and Sun and Anderson et al., 2017) in a unified framework. We now show an alternative proof for a generalized Theorem 2 with the insight of rotation symmetry, by extending the results to more general potential functions.

Theorem 8 (*Conservation of Angular Momentum in General Distributed Coordination Systems*). *Consider a general potential function denoted by $V(p_1, p_2, \ldots, p_n)$ which is a function of relative vectors (i.e., $p_i - p_j$ with $(i, j) \in \mathcal{E}$) and is invariant under rotation action, and a distributed coordination system evolving as a gradient descent flow of V with an underlying undirected interaction graph. Then the angular momentum of the distributed coordination system is conserved and is zero.*

Proof. The invariance of V under rotation action implies that, for any $R \in SO(d)$ with $d = \{2, 3\}$,[2] there holds

$$\begin{aligned} V(p_1, p_2, \ldots, p_n) &= V(\bar{p}_1, \bar{p}_2, \ldots, \bar{p}_n) \\ &= V(R\bar{p}_1, R\bar{p}_2, \ldots, R\bar{p}_n). \end{aligned} \tag{23}$$

Note that any rotation matrix R can be written as $R = e^{\epsilon\hat{\omega}}$, where $\epsilon \in \mathbb{R}$ is a scalar parameter (e.g. angle of rotation), and $\hat{\omega} \in \mathfrak{so}(d)$ is a skew symmetric matrix. In the following we focus on the proof in the 3-D case, in which $\hat{\omega}$ can be obtained from a vector $\omega \in \mathbb{R}^3$ via the so-called *hat operator* (Murray, Li, & Sastry, 1994); i.e., for any $b \in \mathbb{R}^3$, there holds $\hat{\omega}b = \omega \wedge b$. The proof in the 2-D case follows similarly but can be simplified since $\hat{\omega} \in \mathfrak{so}(2)$ can be identified by a single parameter instead of a vector as in the 3-D case.

提纲

五 方法

六 结果

七 结论

七、结论

- 什么是结论?

  - 论文的高度概括和理论总结，结论应该与论文的摘要、引言和论文的主体相呼应。结论要简明扼要，重点说明通过研究得到了什么结果，解决了什么问题，有待改进之处等。

IV. Conclusion and Future Work

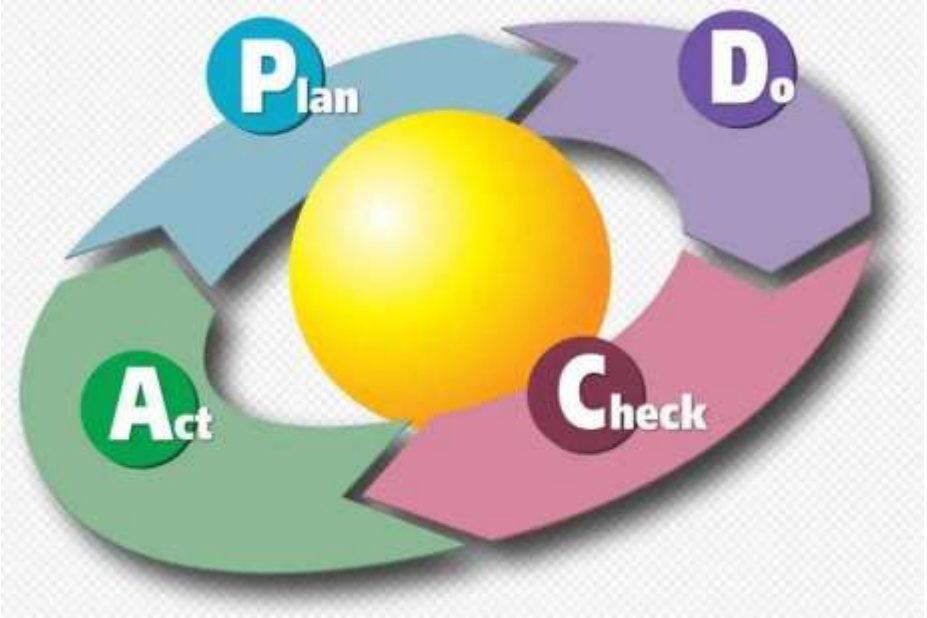
In this article, we have introduced a deep spatial-spectral global reasoning network for HSI denoising. To effectively and efficiently explore the contextual information for HSI denoising, we proposed two global reasoning modules to capture context along the spatial and channel dimensions, respectively. These two modules are further combined with densely connected networks and form the encoder and decoder, which can thus be used to exploit rich feature representations. The network formed by the encoder and decoder can preserve the image structures well while removing the complex noise. Experiments have verified the superiority of our method on both synthetic and real HSI data sets compared with other state-of-the-art HSI denoising methods.

Although the proposed network achieves excellent performance, the design of the network still lacks interpretation. In the future, we may focus on designing an interpretable network deduced from the traditional HSI denoising method (e.g., unfolding an iterative algorithm into a network), and thus each module of the proposed network has its own physical

七、结论

➢ Conclusion

- 论文的高度概括和理论总结，结论应该与论文的摘要、引言和论文的主体相呼应。结论要简明扼要，重点说明通过研究得到了什么结果，解决了什么问题，有待改进之处等。



结论是整个课题研究的总评价

结论中反映了论文的理论或技术方面的科学价值

Close the circle and move beyond.

七、结论

➢ 内容要点——创新与特色

- 本研究结果说明了什么问题，得出了什么规律性的东西，解决了什么理论或实际问题；

7. Conclusion

This paper has proposed two distributed second-order optimization algorithms with global superlinear convergence. The striking features lie in the use of (a) a finite-time set-consensus method, (b) an adaptive version of Newton method for global convergence, and (c) the low-rank matrix approximation methods to compress the Hessian for efficient communication. Future works can focus on asynchronous versions of the proposed algorithms as in Zhang and You (2019a, 2019b), the integration of the proposed algorithms with quasi-Newton methods, and developing more communication-efficient ones.

七、结论

➢ 内容要点——创新与特色

- 本研究结果说明了什么问题，得出了什么规律性的东西，解决了什么理论或实际问题；
- 对前人有关本问题的看法作了哪些检验，哪些与本研究结果一致，哪些不一致，作者做了哪些修正、补充、发展或否定；

7. Conclusions

PLS has been widely used for monitoring complex industrial processes when quality variables are taken into account. There is, however, a lack of understanding of PLS geometry for the purpose of process monitoring. In this paper, the effect of **Y** on the decomposition of the **X**-space is clearly shown and the geometric interpretation of the PLS decomposition structure is given. Based on this interpretation, two alternative algorithms of PLS, W-PLS and SIMPLS, are compared with the standard PLS in terms of the latent space decomposition and process monitoring. It is demonstrated that orthogonal sample space decomposition achieved by PLS is critical for process monitoring. It is concluded from analysis and simulation that monitoring using W-PLS and SIMPLS will cause ambiguous alarms and more missed alarms than the standard PLS. The standard PLS is the most appropriate for process monitoring among these alternative algorithms.

七、结论

➢ 内容要点——创新与特色

- 本研究结果说明了什么问题，得出了什么规律性的东西，解决了什么理论或实际问题；
- 对前人有关本问题的看法作了哪些检验，哪些与本研究结果一致，哪些不一致，作者做了哪些修正、补充、发展或否定；
- 本研究的不足之处或遗留问题。

IV. Conclusion

This paper proposed the framework for QFDD with application to batch multimode processes. The framework consists of three relevant methods: multimode clustering, a nonlinear fault diagnosis method, and online classification of the new measurement. The training data from different operating modes were clustered using the nonlinear KFCM-based method, and a BWP index was developed for determining the optimal mode number. The KPLS method was improved by considering a higher FDR, and based on it, the contribution rate method was used for fault diagnosis. The online data were classified using the abilities of KPLS regression and Bayes inference.

The proposed methods were applied to a batch HSMR process to diagnose faults that affect the product's thickness and flatness. It was seen that the framework can show accurate clustering results, higher detection, and precise diagnosis performance.

Future work considers topics with dynamics and non-Gaussian dataset in batch multimode processes to achieve optimal operating performance.

七、结论

➢ 内容要点——创新与特色

- 本研究结果说明了什么问题，得出了什么规律性的东西，解决了什么理论或实际问题；
- 对前人有关本问题的看法作了哪些检验，哪些与本研究结果一致，哪些不一致，作者做了哪些修正、补充、发展或否定；
- 本研究的不足之处或遗留问题。

- 研究了什么？
- 取得了什么结果？
- 还有哪些值得研究？

七、结论

➢ 内容要点——创新与特色

- 研究了什么?
- 取得了什么结果?
- 还有哪些值得研究?

In this paper, we have proposed and studied a novel spatiotemporal PCA framework, in which the spatial Laplacian is added to preserve the cause-effect relationship of process variables and the temporal Laplacian is added to maintain the geometric structure of process samples. Further, an efficient optimization algorithm based on sGS-ADMM has been developed and analyzed in detail. Numerical studies on the TE benchmark process have verified that the proposed framework can improve the monitoring ability and the proposed optimization algorithm is convergent. Naturally, the spatiotemporal prior can be combined with other data-driven PM approaches, which deserves further investigation.

七、结论

➢ 写作要求

◻ 概括准确，措词严谨

肯定和否定要明确，一般不用“大概”、“也许”、“可能是”这类词语，以免使人有似是而非的感觉，怀疑论文的真正价值。

VII. CONCLUSION

In this article, we proposed a novel feature selection approach, named unsupervised feature selection with RSOGFS, to solve the original $\ell_{2,0}$-norm constrained problem instead of solving its relaxed or approximate problem. RSOGFS directly selects a good feature subset rather than selecting good individuals one by one. Moreover, RSOGFS simultaneously performs feature selection and similarity matrix construction to adaptively learn the local manifold structure of data. Most importantly, two optimization strategies are derived to optimize the proposed RSOGFS model. We proved the convergence and approximation guarantees for the new algorithms. The superiority of RSOGFS over the state of the arts was demonstrated on real-world data sets.

七、结论

➢ 写作要求

□ 概括准确，措词严谨

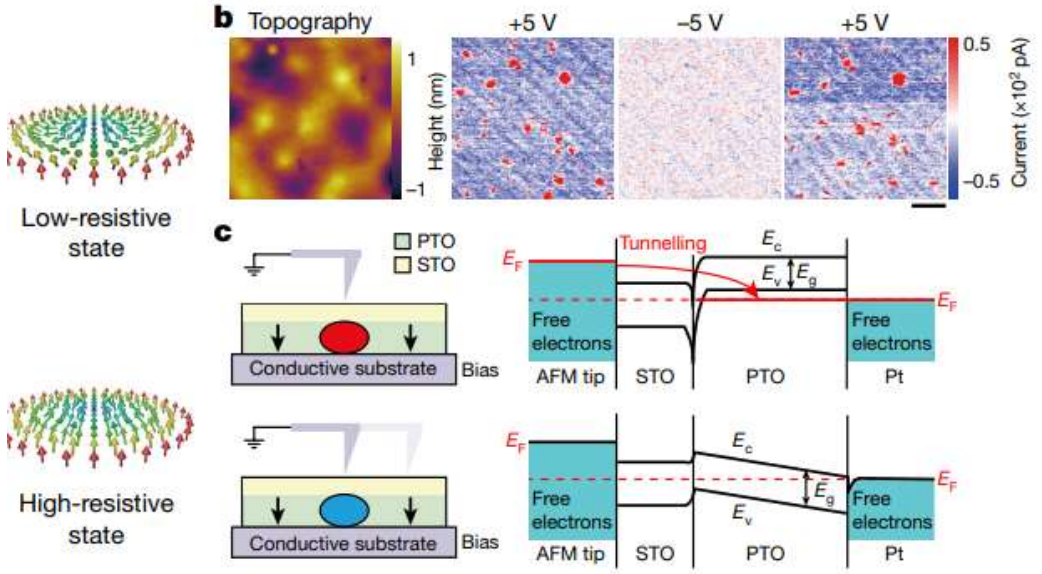
肯定和否定要明确，一般不用“大概”、“也许”、“可能是”这类词语，以免使人有似是而非的感觉，怀疑论文的真正价值。

□ 不作自我评价

不宜用如“本研究具有国际先进水平”、“本研究结果属国内首创”、“本研究结果填补了国内空白”一类语句来作自我评价。

Conclusion

In summary, we report the observation of two types (centre divergent and centre convergent) of skyrmion-like polar nanodomain in $PbTiO_3$/$SrTiO_3$ bilayers transferred onto silicon, which can be converted to each other by applying an external electric field. High-density resistive memories based on these topological nanodomains have been demonstrated and the ‘on’ and ‘off’ states can be controlled by switching the type of nanodomain. There are several unique advantages of this type of polar texture integrated on silicon. (1) As there is only a single layer



七、结论

➢ 常用语

- It is clear from the forgoing discussion that …
- This demonstration/illustration/comparison shows …
- The above results/data lead us to a conclusion that …
- From the results we have obtained/it can be concluded that …
- On the basis of these results we conclude that …
- All these data confirm the previous assumption that …
- It has been proved that the separation ratio of this system is superior to that of the conventional system.
- Studies and trials have led to the conclusion that digital voice transmission has substantial advantages over analog transmission and should thus be provided for future development.

七、结论

➢ 常用语

- On the basis of …, the following conclusion can be drawn…
- From …, we now conclude …
- To sum up, we have revealed…
- We have demonstrated in this paper…
- The results of the experiment indicate…
- On conclusion, the result shows…
- We have described…, we found…
- The research work has brought about a discovery of …
- Finally, a summary is given of …
- These findings of the research have led the author to the conclusion that…

七、结论

➢ 例子

Conclusion

Our results comprehensively demonstrate that a pure reinforcement learning approach is fully feasible, even in the most challenging of domains: it is possible to train to superhuman level, without human examples or guidance, given no knowledge of the domain beyond basic rules. Furthermore, a pure reinforcement learning approach requires just a few more hours to train, and achieves much better asymptotic performance, compared to training on human expert data. Using this approach, AlphaGo Zero defeated the strongest previous versions of AlphaGo, which were trained from human data using handcrafted features, by a large margin.

Humankind has accumulated Go knowledge from millions of games played over thousands of years, collectively distilled into patterns, proverbs and books. In the space of a few days, starting *tabula rasa*, AlphaGo Zero was able to rediscover much of this Go knowledge, as well as novel strategies that provide new insights into the oldest of games.

七、结论

➢ 结果、讨论与结论的侧重

- 结 果: 介绍研究结果(必要时应使用图表)；对重要研究结果的描述和说明;
- 讨 论: 探讨所得到的结果与研究目的或假设的关系、与他人研究结果的比较与分析；对研究结果的解释(是否符合原来的期望)；重要研究结果的意义(推论);研究展望;
- 结 论: 主要认识或论点;概述研究成果可能的应用前景及局限性;建议需要进一步研究的课题或方向

提纲

八 致谢

九 文献

十 简历

八、致谢

➢ Acknowledgment

- 表示对本文有所帮助的人的感谢，而这些人又不适合作为作者署名
- 例如：

Significant technical help

Academic discussion

Financial support

Reviewers

ambiguous alarms and more missed alarms than the standard PLS. The standard PLS is the most appropriate for process monitoring among these alternative algorithms.

Acknowledgements

This work was supported by the national 973 projects under Grants 2010CB731800 and 2009CB32602, and NSFC under Grants 60721003 and 60736026, and the Changjiang Professorship (S. Joe Qin) by the Ministry of Education of PR China.

Appendix A. Proof of Lemma 1

According to Zhang (2004), the oblique projector onto Span(**H**) along Span(**S**) can be obtained by the following equation generally:

八、致谢

➢ Acknowledgment

Acknowledgments. The major part of this work was carried out during tl
first author's postdoctoral stint in the Department of Mathematics at the Nation
University of Singapore. We are grateful to the associate editor and anonymo
referees for their valuable comments and suggestions that have helped to improve th
paper.

ACKNOWLEDGMENTS

The research project is supported by the Australian Research Council (ARC) through the grant DP130100364. Ming Yin is supported by the Foundation of Key Laboratory of Autonomous Systems and Networked Control, Ministry of Education, P.R. China (No. 2013A06), and Guangdong Natural Science Foundation (No. 2014A030313511) also in part supported by National Natural Science Foundation (NSF) of China (grant nos. 61333013 and 61322306). Zhouchen Lin is supported by National Basic Research Program of China (973 Program) (grant no. 2015CB352502), National Natural Science Foundation (NSF) of China (grant nos. 61272341 and 61231002), and Microsoft Research Asia Collaborative Research Program. Zhouchen Lin is the corresponding author.

Acknowledgements The authors would like to thank Dr. Xudong Li and Ms. Meixia Lin for their help in the numerical implementations. We also thank the referees for their valuable suggestions which have helped to improve quality of this paper.

八、致谢

➢ Appendix

- 一些在正文中不宜出现的公式推导或定理证明，可以放在Appendix中，以使正文更加简明扼要。
- 通常在致谢后面，比如证明、说明、具体方案等等。

ambiguous alarms and more missed alarms than the standard PLS. The standard PLS is the most appropriate for process monitoring among these alternative algorithms.

Acknowledgements

This work was supported by the national 973 projects under Grants 2010CB731800 and 2009CB32602, and NSFC under Grants 60721003 and 60736026, and the Changjiang Professorship (S. Joe Qin) by the Ministry of Education of PR China.

Appendix A. Proof of Lemma 1

According to Zhang (2004), the oblique projector onto Span(**H**) along Span(**S**) can be obtained by the following equation generally:

八、致谢

➢ Appendix

- 不过正文必须提及附录及其作用。

ambiguous alarms and more missed alarms than the standard PLS. The standard PLS is the most appropriate for process monitoring among these alternative algorithms.

Acknowledgements

This work was supported by the national 973 projects under ants 2010CB731800 and 2009CB32602, and NSFC under Grants 721003 and 60736026, and the Changjiang Professorship (S. Joe ı) by the Ministry of Education of PR China.

Lemma 1. *Let* $\boldsymbol{\Pi}_{P|R^{\perp}}$ *denote the projector onto the subspace* Span$\{\mathbf{P}\}$, *along the subspace* Span$\{\mathbf{R}\}^{\perp}$.

$$\boldsymbol{\Pi}_{P|R^{\perp}} = \mathbf{P}\mathbf{R}^{\mathrm{T}}$$
$$\boldsymbol{\Pi}_{R^{\perp}|P} = \mathbf{I} - \mathbf{P}\mathbf{R}^{\mathrm{T}}.$$

The proof is given in Appendix A.

(15) **pendix A. Proof of** Lemma 1

According to Zhang (2004), the oblique projector onto Span($\mathbf{H}$) ıng Span($\mathbf{S}$) can be obtained by the following equation generally:

八、致谢

➢ 那些奇葩的致谢

Acknowledgments

This work was supported by the National Natural Science Foundation of China (Grant nos. 81470612 and 81670832). In addition, Jianghua Hu especially wishes to thank JJ Lin, whose songs have given her powerful spiritual support over the past decade.

八、致谢

➢ 那些奇葩的致谢

OPEN

Astragaloside IV ameliorates allergic inflammation by inhibiting key initiating factors in the initial stage of sensitization

Received: 20 July 2016
Accepted: 07 November 2016
Published: 05 December 2016

Kai-fan Bao[1,*], Xi Yu[1,*], Xiao Wei[1,†], Li-li Gui[1], Hai-liang Liu[1], Xiao-yu Wang[1], Yu Tao[2], Guo-rong Jiang[2] & Min Hong[1]

Acknowledgements

This work was funded by Projects 81073121, 81373549 and 81473395, supported by the National Natural Science Foundation of China, the Priority Academy Program Development of Jiangsu Higher Education Institutions, and the Natural Science Foundation of Jiangsu Province (BK20141466). KFB thanks the inimitable care and support of XY over the years. I love you. Will you spend the rest of your life with me?

八、致谢

➢ 那些奇葩的致谢

Performance analysis for minimally nonlinear irreversible refrigerators at finite cooling power

Rui Long *, Zhichun Liu, Wei Liu *

School of Energy and Power Engineering, Huazhong University of Science and Technology, 1037 Luoyu Road, Wuhan 430074, China

Acknowledgments

We acknowledge the support received from the National Natural Science Foundation of China (51706076, 51736004). In addition, Rui Long wants to thank, in particular, the patience, care and support from Panpan Mao over the passed years. Will you marry me?

提纲

八 致谢

九 文献

十 简历

九、文献

➢ References

- 科技论文必备的部分，一般附在论文之后。参考文献要列出本文研究工作所参考的主要论文、著作或学位论文等，在本文的正文中要逐一引用。

References

Alcala, C., & Qin, S. (2009). Reconstruction-based contribution for process monitoring. *Automatica*, *45*(7), 1593–1600.

Chiang, L. H., Russell, E., & Braatz, R. D. (2001). *Fault detection and diagnosis in industrial systems*. London: Springer.

Choi, S. W., & Lee, I. B. (2005). Multiblock PLS-based localized process diagnosis. *Journal of Process Control*, *15*(3), 295–306.

Dayal, B. S., & MacGregor, J. F. (1997). Improved PLS algorithms. *Journal of Chemometrics*, *11*(1), 73–85.

De Jong, S. (1993). SIMPLS: An alternative approach to partial least squares regression. *Chemometrics and Intelligent Laboratory Systems*, *18*(3), 251–263.

Di Ruscio, D. (2000). A weighted view on the partial least-squares algorithm. *Automatica*, *36*(6), 831–850.

Downs, J. J., & Vogel, E. F. (1993). A plant-wide industrial process control problem. *Computers & Chemical Engineering*, *17*(3), 245–255.

Dunia, R., & Qin, S. J. (1998). Subspace approach to multidimensional fault identification and reconstruction. *AIChE Journal*, *44*(8), 1813–1831.

Helland, I. S. (1988). On the structure of partial least squares regression. *Communications in Statistics-Simulation and Computation*, *17*(2), 581–607.

Hóskuldsson, A. (1988). PLS regression methods. *Journal of Chemometrics*, *2*, 211–228.

Kresta, J. V., MacGregor, J. F., & Marlin, T. E. (1991). Multivariate statistical monitoring of process operating performance. *Canadian Journal of Chemical Engineering*, *69*(1), 35–47.

Lee, G., Han, C. H., & Yoon, E. S. (2004). Multiple-fault diagnosis of the Tennessee Eastman process based on system decomposition and dynamic PLS. *Industrial and Engineering Chemistry Research*, *43*(25), 8037–8048.

Lu, N., Gao, F., & Wang, F. (2004). Sub-PCA modeling and on-line monitoring strategy for batch processes. *AIChE Journal*, *50*(1), 255–259.

九、文献

- 期刊
  - 作者姓名
  - 文章标题
  - 杂志名称
  - 年卷(期)
  - 引用部分起止页码

九、文献

➢ 期刊

- 作者姓名
- 文章标题
- 杂志名称
- 年卷(期)
- 引用部分起止页码

IEEE Format

Y. Liu, J. Zeng, L. Xie, S. Luo, and H. Su, “Structured joint sparse principal component analysis for fault detection and isolation,” IEEE Trans. Ind. Informat., vol. 15, no. 5, pp. 2721 – 2731, May 2019.

European Forma

Y. Liu, J. Zeng, L. Xie, S. Luo, H. Su, Structured joint sparse principal component analysis for fault detection and isolation, IEEE Trans. Ind. Inf. 15 (5) (2018) 2721 – 2731.

九、文献

- 书写方式（数学常用，但工程少见）

```
\begin{thebibliography}{00}

\bibitem{ding2014data}
 S. Ding,
 ``Data-Driven Design of Fault Diagnosis and Fault-Tolerant Control Systems,''
 \emph{London, U.K.: Springer-Verlag}, 2014.


\bibitem{chen2021complex}
 X. Chen, J. Wang, and S. Ding,
 ``Complex system monitoring based on distributed least squares method,''
 \emph{IEEE Trans. Autom. Sci. Eng.}, vol. 18, no. 4, pp. 1892-1900, 2021.


\bibitem{li2021asynchronized}
 L. Li, S. Ding, Y. Na, and J. Qiu,
 ``An asynchronized observer based fault detection approach for uncertain switcl
 \emph{IEEE Trans. Circuits Syst. II, Exp. Briefs}, vol. 69, no. 2, pp. 514-518,
```

九、文献

➢ 另一种书写方式

A review on recent development of spacecraft attitude fault tolerant control system

S Yin, B Xiao, SX Ding, D Zhou - IEEE Transactions on ..., 2016 - ieeexplore.ieee.org

Motivated by several accidents, attitude control of a spacecraft subject to faults/failures has gained considerable attention in a wider range of aerospace engineering and academic ...

☆ 保存 99 引用 被引用次数：230 相关文章

```
\bibliographystyle{IEEEtran}
\bibliography{IEEEabrv,mybibfile}
```

```
@article{yin2016review,
  title={A review on recent development of spacecraft attitude fault toler
  author={Yin, Shen and Xiao, Bing and Ding, Steven X and Zhou, Donghua},
  journal={IEEE Transactions on Industrial Electronics},
  volume={63},
  number={5},
  pages={3311--3320},
  year={2016},
  publisher={IEEE}
}
```

九、文献

➢ 注意事项1

Feature selection based on structured sparsity: A comprehensive study

J Gui, Z Sun, S Ji, D Tao, T Tan - IEEE transactions on neural ..., 2016 - ieeexplore.ieee.org

Feature selection (FS) is an important component of many pattern recognition tasks. In these tasks, one is often confronted with very high-dimensional data. FS algorithms are designed to identify the relevant feature subset from the original features, which can facilitate subsequent analysis, such as clustering and classification. Structured sparsity-inducing feature selection (SSFS) methods have been widely studied in the last few years, and a number of algorithms have been proposed. However, there is no comprehensive study ...

☆ 保存 99 引用 被引用次数：241 相关文章 所有 10 个版本

```
@article{gui2016feature,
  title={Feature selection based on structured sparsi
  author={Gui, Jie and Sun, Zhenan and Ji, Shuiwang a
  journal={IEEE transactions on neural networks and l
  volume={28},
  number={7},
  pages={1490--1507},
  year={2016},
  publisher={IEEE}
}
```

Published in: IEEE Transactions on Neural Netw
Volume: 28 , Issue: 7, July 2017)

Page(s): 1490 - 1507 **INSPEC**

Date of Publication: 22 April 2016 **DOI:** 10.

ISSN Information: **Publish**

PubMed ID: 28287983

九、文献

- 注意事项2

References

[1] Frank PM. Analytical and qualitative model-based fault diagnosisca survey and some new results. Eur J control 1996;2(1):6–28.

[2] Ding SX. Model-based fault diagnosis techniques: design schemes, algorithms, and tools. Springer Science and Business Media; 2008.

[3] Chen J, Patton RJ. Robust model-based fault diagnosis for dynamic systems. Springer Science & Business Media; 2012.

[4] Ding SX. Data-driven design of fault diagnosis and fault-tolerant control systems. Springer; 2014.

[5] Qin SJ. Survey on data-driven industrial process monitoring and diagnosis. Annu Rev Control 2012;36(2):220–34.

[6] Yin S, Ding SX, Xie X, Luo H. A review on basic data-driven approaches for industrial process monitoring. IEEE Trans Ind Electron 2014;61(11):6418–28.

[7] Chen Z, Ding SX, Zhang K, Li Z, Hu Z. Canonical correlation analysis-based fault detection methods with application to alumina evaporation process. Control Eng Pract 2016;46(1):51–8.

[8] Chen Z, Zhang K, Ding SX. Improved canonical correlation analysis-based fault detection methods for industrial processes. J Process Control 2016;41(1):26–34.

[9] Hu Z, Chen Z, Gui W, Jiang B. Adaptive pca based fault diagnosis scheme in imperial smelting process. ISA Trans 2014;53(5):1446–55.

[10] Zhou D, Li G, Qin SJ. Total projection to latent structures for process monitoring. AIChE J 2010;56(1):168–78.

[11] Ding SX, Yin S, Peng K, Hao H. A novel scheme for key performance indicator prediction and diagnosis with application to an industrial hot strip mill. IEEE Trans Ind Inform 2013;9(4):2239–47.

[12] Zhang K, Hao H, Chen Z, Ding SX, Peng K. A comparison and evaluation of key

[17] X. Suo, Topics in high-dimensional statistical learning, Ph.D. thesis, Stanford University (2018).

[18] R. T. Rockafellar, Convex analysis, Princeton University Press, 2015.

[19] S. Boyd, N. Parikh, E. Chu, B. Peleato, J. Eckstein, et al., Distributed optimization and statistical learning via the alternating direction method of multipliers, Foundations and Trends® in Machine Learning 3 (1) (2011) 1–122.

[20] M. R. Hestenes, Multiplier and gradient methods, Journal of Optimization Theory and Applications 4 (5) (1969) 303–320.

[21] M. J. D. Powell, A method for nonlinear constraints in minimization problems, Optimization (1969) 283–298.

[22] J. J. Moreau, Fonctions convexes duales et points proximaux dans un espace Hilbertien, Comptes rendus hebdomadaires des séances de l'Académie des sciences 255 (1961) 2897–2899.

[23] N. Parikh, S. Boyd, et al., Proximal algorithms, Foundations and Trends® in Optimization 1 (3) (2014) 127–239.

[24] D. L. Donoho, De-noising by soft-thresholding, IEEE Transactions on Information Theory 41 (3) (1995) 613–627.

[25] J.-J. Moreau, Proximité et dualité dans un espace Hilbertien, Bulletin de la Société mathématique de France 93 (1965) 273–299.

[26] X. Li, D. Sun, K.-C. Toh, A highly efficient semismooth Newton augmented Lagrangian method for solving Lasso problems, SIAM Journal on Optimization 28 (1) (2018) 433–458.

[27] G. H. Golub, C. F. Van Loan, Matrix Computations, Vol. 3, JHU press, 2012.

九、文献

- 注意事项3

REFERENCES

[1] Q. Sun and Z. Ge, "A survey on deep learning for data-driven soft sensors," *IEEE Trans. Ind. Informat.*, early access, Jan. 20, 2021, doi: 10.1109/TII.2021.3053128.

[2] Y. Jiang, S. Yin, J. Dong, and O. Kaynak, "A review on soft sensors for monitoring, control and optimization of industrial processes," *IEEE Sensors J.*, early access, Oct. 22, 2020 , doi: 10.1109/JSEN.2020.3033153.

[3] Z. Ge, Z. Song, and F. Gao, "Review of recent research on data-based process monitoring," *Ind. Eng. Chem. Res.*, vol. 52, no. 10, pp. 3543–3562, Mar. 2013.

[4] S. Yin, J. J. Rodriguez-Andina, and Y. Jiang, "Real-time monitoring and control of industrial cyberphysical systems: With integrated plant-wide monitoring and control framework," *IEEE Ind. Electron. Mag.*, vol. 13, no. 4, pp. 38–47, Dec. 2019.

[5] G. Chen and Z. Ge, "Hierarchical Bayesian network modeling framework for large-scale process monitoring and decision making," *IEEE Trans. Control Syst. Technol.*, vol. 28, no. 2, pp. 671–679, Mar. 2020.

九、文献

Second Order Approximation Solution of Nonlinear Large Deflection Problem of Yongjiang Railway Bridge in Ningbo

CHEN Wei-zang

(*Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai 200436, P R China*)

[参 考 文 献]

本文不必参考任何文献. 文中有关小挠度的理论在一般的材料力学书中都能见到, 有关非线性大挠度梁的基本微分方程及其近似解法, 亦是首次在本文中提出. 本人未见过宁波甬江大桥的设计, 但曾到现场参观过, 只是未曾听见有关技术人员具体解说过, 有些江宽、高差和两端接不上的数据, 只是目测估计的, 如有不妥之处, 还请谅解.

向大佬低头

提纲

八 致谢

九 文献

十 简历

十、简历

- Author’s biography
  - 不少杂志是不需要这一部分的，但世界上有些著名杂志要求在论文结束后还要有一个作者简介(甚至有的杂志还要印上作者的照片，如IEEE杂志)，所以作者本人应把这一简介的英文文本随同论文稿件一并寄上。

Francesco Bullo (S'95–M'99–SM'03–F'10) received the Laurea degree *(summa cum laude)* in electrical engineering from the University of Padova, Padua, Italy, in 1994, and the Ph.D. degree in control and dynamical systems from the California Institute of Technology, Pasadena, CA, USA, in 1999.

He is a Professor with the Mechanical Engineering Department, University of California at Santa Barbara, Santa Barbara, CA, USA. From 1998 to 2004, he was an Assistant Professor with the Coordinated Science Laboratory, University of Illinois at Urbana-Champaign. His main research interest is multi-agent networks with application to robotic coordination, distributed computing, and power networks. Other interests include vehicle routing, geometric control, and motion planning problems. He has published more than 200 papers in international journals, books and refereed conferences. He is the coauthor, with Andrew D. Lewis, of *Geometric Control of Mechanical Systems* (Springer, 2004) and, with Jorge Cortés and Sonia Martínez, of *Distributed Control of Robotic Networks* (Princeton Univ. Press, 2009).

Dr. Bullo has served or is serving on the Editorial Boards of the IEEE TRANSACTIONS ON AUTOMATIC CONTROL, the *ESAIM: Control, Optimization, and the Calculus of Variations*, and the *SIAM Journal of Control and Optimization*. His students' papers were finalists for the Best Student Paper Award at the IEEE Conference on Decision and Control (2002, 2005, 2007), and the American Control Conference (2005, 2006, 2010).

十、简历

➢ 内容

- 自大学起获得的学位名称、时间、专业和学校及其地点。(也有个别人在开头一句话写上自己的出生年月日和出生地。)
- 工作经历(包括时间、职责、工作单位和地点)。
- 目前工作的侧重点或科研的兴趣及方向。
- 突出的论文和著作、科研成果、重点工程及获奖情况等。如果是著名学会的会员，则也要写上。

十、简历

➢ 要点

- 自大学起获得的学位名称、时间、专业和学校及其地点。(也有个别人在开头一句话写上自己的出生年月日和出生地。)
- 工作经历(包括时间、职责及工作单位和地点)。
- 目前工作的侧重点或科研的兴趣及方向。
- ~~突出的论文和著作、科研成果、重点工程及获奖情况等。如果是著名学会的会员，则也要写上。~~

XXX received the B. Eng. Degree in electrical engineering from Tianjin University, Tianjin, China, and the M. A. Sc. Degree in electrical engineering from University of Toronto, Toronto, Ont., Canada, in 2012 and 2015, respectively. Since 2016, he has been working toward the Ph.D Degree in electrical engineering at the University of Calgary, Calgary, Alta., Canada. His current research interests include switched-capacitor networks, three-dimensional digital image processing, one- and multi-dimensional digital filter design and implementation.

十、简历

➢ 学位名称

- B．S．(B．Sc．) 理学士
- B．A． 文学士
- B．Eng． 工学士
- M．S． 理硕士
- M．A． 文硕士
- M．Eng． 工硕士
- Ph．D 博士
- Doctor of Engineering 工程博士

十、简历

➢ 常用语

◘ 用于学历方面的句型

从XXXX年至XXXX年在XX大学学习XX专业

He attended … University from l996 to 2000, majoring (or specializing) in …

◘ 用于获得学位的句型

在XXXX年在XX(地方的)XX大学XX系获得了XX学位。

In 2000, he received (obtained／earned／was awarded) a (an／the／his) … degree in …from…Department at …University，…(city, state or province, country).

十、简历

➢ 常用语

□ 用于表述科研方向的句型

His research interests (work) focus on (concentrate on／are in) the area(s) (field(s)) of …

He is actively (has been) engaged in (research in the area(s) of) …

He is active in (the area(s) of) …

□ 用于科研成果及获奖方面的句型

He invented (has made contributions specifically in) …

He received the medal (award) of …

He was awarded …

He has published …books and …papers.

十、简历

➢ 常用语

◘ 用于工作经历的句型

在XX(单位)当XX

He works (acts／serves) as … at (in／for) …

是XX大学XX系XX专业的副教授

He is (an) associate professor of… in…Department at …University.

在XX大学攻读XX专业博士学位

He has been working (is (currently／presently) working) towards (on) the Ph.D． degree in …at …University.

十、简历

➢ 例子

Key-Performance-Indicator-Related Process Monitoring Based on Improved Kernel Partial Least Squares

Yabin Si, Youqing Wang, *Senior Member, IEEE*, and Donghua Zhou, *Fellow, IEEE*

Yabin Si received the B.S. degree in automation, in 2017, from the Beijing University of Chemical Technology, Beijing, China, where he is currently working toward the M.S. degree in control engineering.

His research interests include process monitoring based on principal component analysis and partial least squares.

十、简历

➢ 例子

Youqing Wang (Senior Member, IEEE) received the B.S. degree from Shandong University, Jinan, China, in 2003, and the Ph.D. degree in control science and engineering from Tsinghua University, Beijing, China, in 2008.

He is currently a Professor with the Shandong University of Science and Technology, Qingdao, China, and also with the Beijing University of Chemical Technology, Beijing, China. His research interests include fault-tolerant control, state monitoring, modeling and control of biomedical processes, and iterative learning control.

Dr. Wang is an (Associate) Editor for the IEEE ACCESS, *Multidimensional Systems and Signal Processing*, and *Canadian Journal of Chemical Engineering*. He holds membership of two IFAC Technical Committees (TC6.1 and TC8.2). He is a recipient of several research awards (including Journal of Process Control Survey Paper Prize and ADCHEM2015 Young Author Prize).

十、简历

➢ 例子

Donghua Zhou (Fellow, IEEE) received the B.Eng., M.Sci., and Ph.D. degrees in electrical engineering from Shanghai Jiao Tong University, Shanghai, China, in 1985, 1988, and 1990, respectively.

He was an Alexander von Humboldt Research Fellow with the University of Duisburg, Duisburg, Germany, from 1995 to 1996, and a Visiting Scholar with Yale University, New Haven, CT, USA, from 2001 to 2002. In 1996, he joined Tsinghua University, Beijing, China, and was promoted as a Full Professor in 1997. From 2008 to 2015, he was the Head of the Department of Automation, Tsinghua University. He is currently the Vice President of Shandong University of Science and Technology, Qingdao, China.

Dr. Zhou is a member of IFAC Technical Committee (TC) on Fault Detection, Supervision and Safety of Technical Processes (SAFEPROCESS), an Associate Editor of the *Journal of Process Control*, the Vice Chairman of the Chinese Association of Automation (CAA), the TC Chair of the SAFEPROCESS Committee, CAA. He was also the NOC Chair of the 6th IFAC Symposium on SAFEPROCESS, in 2006.

其他

➢ 科技写作中易忽视的字母该大写的场合

- 图表、定理、章节、参考文献等有表示顺序的号码时，如:

Fig.1 (Figure 1), Table 2, Theorem 3, Problem 4, Reference [5], Chapter 6, Section 7…

- 文章中提到带有学位、学衔的人时，其称呼的首字母要大写

The authors would like to acknowledge the excellent review of the entire manuscript by Dr. Edward Nelson.

I am indebted to Professors Glen Goff, W. W. Peterson, M. A. Miller, Robert Carroll, Irving Reed, and Irwin Lebow for their suggestions.

其他

➢ 英汉表达不一致的地方

□ 主语不一致

这台计算机有毛病

Something is wrong with this computer.

其他

➢ 英汉表达不一致的地方

- 从句中代词使用位置不同

金属受热（它们）就会膨胀

Metals expand when (they are) heated.

其他

➢ 英汉表达不一致的地方

- 比较对象表达上的不一致

铜的导电率比铝高

The conductivity of copper is higher than that of aluminum.

学术英语写作
Scientific Writing

第三章 英语写作

提纲

一 词汇特点

二 语法特点

三 文体特点

➢ 说一下代表作

Automatica.pdf
CDC.pdf
CVPR.pdf
Nature.pdf
PAMI.pdf
SIAM.pdf
TAC.pdf
TIE.pdf
中国科学.pdf
自动化学报.pdf

一、词汇特点

➢ 日常英语

People get natural rubber from rubber trees as a white, milky liquid, which is called latex. They mix it with acid, and dry it, and then they send it to countries all over the world. As the rubber industry grew, people needed more and more rubber. They started rubber plantations in countries with hot, wet weather conditions, but these still could not give enough raw rubber to meet the needs of growing industry.

➢ 科技英语

Natural rubber is obtained from rubber trees as a white, milky liquid known as latex. This is treated with acid and dried before being dispatched to countries all over the world. As the rubber industry developed, more and more rubber was required. Rubber plantations were established in countries with a hot, humid climate, but these still could not supply sufficient raw rubber to satisfy the requirements of developing industry.

一、词汇特点

- 专业性：科技术语较多。

- use up——exhaust
- throw back——reflect
- carry out——perform
- get rid of——eliminate
- keep up——maintain
- push into——insert
- think about——consider
- take away——remove
- finish——complete
- buy——purchase
- underwater——submarine
- enough——sufficient
- handbook——manual
- careful——cautious
- try——attempt
- get——obtain

一、词汇特点

➢ 缩略语

- 缩略法

expo：exposition（展览）

- 拼缀法

knowbot：knowledge robot（智能机器人）

- 首字母拼音法

TOEFL: Test of English as a Foreign Language（托福）

- 首字母缩略法

CD: compact disk

一、词汇特点

➢ 前后缀出现率高

- 科技英语中使用前后缀很多，出现频率也高
- 前缀：semi, auto, micro, thermo等

Searching Multi-Rate and Multi-Modal Temporal Enhanced Networks for Gesture Recognition

一、词汇特点

➢ 前后缀出现率高

- 前缀：semi, auto, micro, thermo等
- 后缀：ity, ment, ness, sion, tion, th, ure, able, ible, ant, ent, ic, ical, ive, ous等

Abstract—Gesture recognition has attracted considerable attention owing to its great potential in applications. Although the great progress has been made recently in multi-modal learning methods, existing methods still lack effective integration to fully explore synergies among spatio-temporal modalities effectively for gesture recognition. The problems are partially due to the fact that the existing manually designed network architectures have low efficiency in the joint learning of multi-modalities. In this paper, we propose the first neural architecture search (NAS)-based method for RGB-D gesture recognition. The proposed method includes two key components: 1) enhanced temporal representation via the proposed 3D Central Difference Convolution (3D-CDC) family, which is able to capture rich temporal context via aggregating temporal difference information; and 2) optimized backbones for multi-sampling-rate branches and lateral connections among varied modalities. The resultant multi-modal multi-rate network provides a new perspective to understand the relationship between RGB and depth modalities and their temporal dynamics. Comprehensive experiments are performed on three benchmark datasets (IsoGD, NvGesture, and EgoGesture), demonstrating the state-of-the-art performance in both single- and multi-modality settings. The code is available at https://github.com/ZitongYu/3DCDC-NAS.

提纲

一 词汇特点

二 语法特点

三 文体特点

二、语法特点

➢ 一般陈述句多

- 科技论文中常用的两种时态是现在时和过去时。

Abstract—Cyber-physical systems are ubiquitous in power systems, transportation networks, industrial control processes, and critical infrastructures. These systems need to operate reliably in the face of unforeseen failures and external malicious attacks. In this paper: i) we propose a mathematical framework for cyber-physical systems, attacks, and monitors; ii) we characterize fundamental monitoring limitations from system-theoretic and graph-theoretic perspectives; and ii) we design centralized and distributed attack detection and identification monitors. Finally, we validate our findings through compelling examples.

Index Terms—Cyber-physical systems, descriptor systems, distributed control, fault detection, geometric control, graph theory, networks, security.

二、语法特点

➢ 一般陈述句多

- 科技论文中常用的两种时态是现在时和过去时。

VI. Conclusion

We have analyzed fundamental monitoring limitations for cyber-physical systems under attack modeled by linear time-invariant descriptor systems with exogenous inputs. In particular, i) we have characterized undetectable and unidentifiable attacks from system-theoretic and graph-theoretic perspectives, ii) we have designed centralized and distributed monitors, and iii) we have provided illustrative examples. Future and ongoing work includes i) a detailed analysis of the convergence of our distributed monitors, ii) the design of distributed identification monitors, and iii) the design of monitors robust to system noise and unmodeled dynamics.

二、语法特点

➢ 一般陈述句多

- 科技论文中常用的两种时态是现在时和过去时。

D. Example of Detection and Identification in the Presence of Noise and Model Uncertainties

We apply our centralized attack detection and identification methods to the IEEE RTS96 power network [53]. In particular, we first consider the nominal case, in which the power network dynamics evolve as linear time-invariant descriptor system, as described in Section II. Second, we consider the case of additive state and measurement noise, and we show the robustness of the attack detection and identification monitors. Third, we consider the case of nonlinear differential-algebraic power network dynamics and show the effectiveness of our methods in the presence of unmodeled nonlinear dynamics.

二、语法特点

现在时

- 普遍认可的概念和观点-现在时（已经发表的结果通常被视为“事实”）
- “前言”- 现在时（因为其所介绍的是前人构建的知识）
- 展现数据和描述假说和原理

The newly discovered planet is at least as big as Pluto.

Most regions where this problem arises belong to category X.

二、语法特点

过去时

- 描述实验结果-过去时（因为实验已经结束，而你的结果尚未成为公认的“事实”）
- “材料和方法”以及“结论”-过去时

Higher temperatures resulted in less bud formation.

The three images were taken about 90 minutes apart.

二、语法特点

➢ 被动语态多

- 由于在科技论文中描述的都是事物、过程和现象，科技文章重在陈述客观事实，有意排除个人主观感情因素，被动句的使用就有利于实现以客观事物为主体，阐明客观事实的目的。
- 故该文体文章的主语多为非人称主语，这比较适合使用被动语态，在一定程度上提高了科技文献的客观性。

Due to the vast amount of the literature, it would be challenging to exhaustively review the existing results on formation control. Rather than an exhaustive review, we thus focus on the characterization of formation control schemes in terms of the sensing capability and the interaction topology of agents because we believe that both of them are linked to the essential features of multi-agent formation control.

The characterization of formation control schemes in terms of the sensing capability and the interaction topology naturally leads to the question of what variables are sensed and what variables are actively controlled by multi-agent systems to achieve their desired formation. The types of sensed variables specify the requirement on the sensing capability of individual agents. Meanwhile, the types of controlled variables are essentially connected to the interaction topology. Specifically, if positions of individual agents are actively controlled, the agents can move to their desired positions without interacting with each other. In the case that inter-agent distances are actively controlled, the formation of agents can be treated as a rigid body. Then the agents need to interact with

二、语法特点

➢ 被动语态多

- 施动者属于某种动物、植物或物质

The water is absorbed by the plant.

- 施动者为某一组织或机构

Large quantities of fuel are used by modern industry.

- 施动者是一种自然过程

The growth was affected by radiation.

- 施动者为某种情况或原因

The work was unaffected by the extent of the damage.

- 施动者为赖以进行动作的手段或方法，施动者除了by外，还可以由by means of引出：

The machine is powered by means of a small electric motor.

二、语法特点

➢ 简略表达多

- 科技语言所要表达的事理关系比较复杂，因此语言精炼简明显得格外重要。实践中常常用名词词组代替句子形式，用分词独立结构代替从句，用省略句代替完全句。

After it is separated……

After separating

二、语法特点

➢ 简略表达多

- 化倾向主要指广泛使用能表示动作或状态的抽象名词或起名词功用的非限定性动词。名词化可以把一个句子变成一个短语，可以使复合句变成简单句。

After it is separated……

After separation

二、语法特点

➢ 简略表达多

◘ 简化目的或结果状语从句

The moving parts of a machine are often oiled so that friction may be greatly reduced.

The moving parts of a machine are often oiled for great reduction of friction.

二、语法特点

➢ 简略表达多

◘ 简化名词从句

The engineer has told us where we shall drill another oil well.

The engineer has told us where to drill another oil well.

提纲

一 词汇特点

二 语法特点

三 文体特点

三、文体特点

- **准确Accuracy**
  - 要正确地运用英语的语法与句型
  - 不要使用意义模棱两可的词汇和表达方式

The rest of this article is as follows. In Section 2, some concepts about uniform attractor, cocycle attractor ~~and~~ NRDS are provided. In Section 3, we will get the stochastic three-component Gray-Scott system ~~generates~~ a NRDS. In Section 4, some uniform ~~priori~~ estimates of solutions are established. In Section 5, the existence of uniform attractor is proved.

三、文体特点

- **准确Accuracy**
  - 要正确地运用英语的语法与句型
  - 不要使用意义模棱两可的词汇和表达方式
- **清楚Clear**
  - 提供明确的信息
  - 使用容易理解的词汇

However, only a few numbers of research approaches have been promoted to resolve the manifold learning problem of unaligned data [33]–[35]. Initially, multi-view Local Linear Embedding (MLLE) [33] suggests the local geometric details of each feature space as maintained by LLE criterion and acquires additional details by assigning different weights to local patches between features. It is obvious that these approaches are based on a fundamental assumption that it shares similar intra-class variational information. By defining a cross-view model, Multi-view Diffusion Mapping [34] utilizes the inherent relation within each view along with the mutual relations, while an indicated a random walk process among subjects is prevented from expecting among the different perspectives, which is robust to extension and insensitive to small structural modification among objects. Next, semi-

三、文体特点

- **准确Accuracy**
  - 要正确地运用英语的语法与句型
  - 不要使用意义模棱两可的词汇和表达方式
- **清楚Clear**
  - 提供明确的信息
  - 使用容易理解的词汇
- **简洁Simple**
  - 限制段落的长度
  - 限制句子和所选词汇和词组的长度

I. INTRODUCTION

Image recognition or classification techniques work efficiently with controlled acquisition conditions and well-aligned images, but the dramatic appearance changes in pose, significant illumination variation, partial occlusion, as well as reduced or even no alignment [1], [2] all fail these approaches significantly. The extreme difficulty on alignment is especially challenging since domain transformations cause it problematical to measure image similarity for classification and recognition. Although long-standing batch image alignment has been investigated over two decades and many algorithms have been proposed, achieving a high compelling aligned image is still elusive.

三、文体特点

➢ 如何使表达准确——正确选词

- The marines took with them full combat equipment including tanks, artillery, jeeps, and flamethrowers.
- This laboratory does not even have a heating installation.
- This model has separate instruments for oil pressure, water temperature, fuels gauge, and ammeter.

- equipment是不可数名词，意义上往往指有形的、看得见的硬件设备；
- installation也指设备、设施，但一般是指安装或装配上去的设备，不可以随时拿走或拆卸；
- instrument常指精密度较高的器械、仪器、仪表

三、文体特点

➢ 如何让语言简洁——避免赘词

- The use of transgenic technology is becoming increasingly more widespread.

三、文体特点

➢ 如何让语言简洁——避免赘词

- The use of transgenic technology is becoming increasingly more widespread.
- The aluminum metal cathode became pitted during the glow discharge.

三、文体特点

➢ 如何让语言简洁——避免赘词

- (already) existing
- (alternative) choices
- at (the) present (time)
- (basic) fundamentals
- (completely) eliminate
- (continue to) remain
- (currently) being
- (currently) underway
- (empty) space
- had done (previously)
- Mix (together)
- Never (before)
- None (at all)
- Now (at this time)
- Period (of time)
- (separate) entities
- Start (out)
- (still) persists

三、文体特点

➢ 如何让语言简洁——避免赘词

◘ 删除无意义的词语和结构

as a matter of fact,

it should be point out that,

I might add that,

it is noteworthy that,

the fact that,

it is significant that,

the presence of

三、文体特点

➢ 如何让语言简洁——避免赘词

- 用短语替代从句：能用单词不用短语，能用短语不用从句。

If As are applied to B, the following sample can be obtained.

Application of A in B medium promotes the following sample.

- 过去分词短语替代从句

The signals which are not wanted

The unwanted signals

三、文体特点

➢ 如何让语言简洁——避免赘词

- 介词短语替代从句，使句子结构简单、精炼，具有从句的功能

If the temperature is higher than 60 C.

At temperature higher than 60 C.

- With + 复合结构 = 无动词从句

A brief introduction to the cell biology is given with emphasis on histology.

An analysis has been made with satisfactory results.

- 使用省略手段

When (it is) powered, a substance may change its color.

Red is seen to have the longest wave, violet the shortest wave, and green intermediate between the two.

三、文体特点

➢ 原则

- Clarity——Be Clear
- Conciseness——Be Concise
- Objectivity——Be Objective
- Coherence——Be Coherent
- Correct——Be correct

三、文体特点

- Keep in mind

The writer's aim should be to be understood at first reading. It is your responsibility to be clear – not your reader's to unscramble your muddled message.

- ---Elizabeth Murphy

三、文体特点

- Keep in mind

Never use a long word where a short one will do.

--- George Orwell

学术英语写作
Scientific Writing

第四章 投稿须知

提纲

一 投稿

二 审稿

三 回复

四 其他

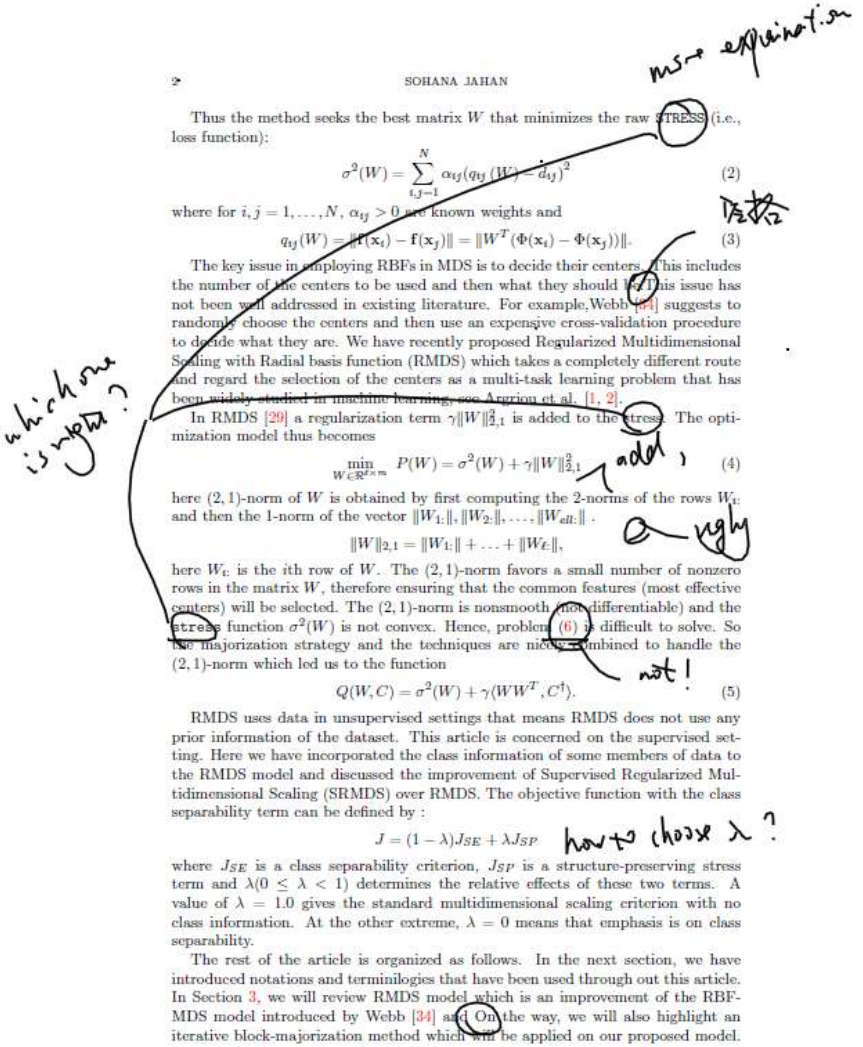
一、投稿

➢ 细节决定成败

- Poor preparation ≈ Poor research

B. Practical case

In this subsection, a process with both continuous and binary variables from a ultra-supercritical thermal power plant (USTPP) is adopted to ~~demonstrated~~ the effectiveness and efficiency of the proposed method. USTPP has attracted much attention in the power industry due to its high efficiency of power generation, low pollution emissions, and high operational reliability [2], [38]. However, it will bring huge



2 SOHANA JAHAN

Thus the method seeks the best matrix W that minimizes the raw STRESS (i.e., loss function):

$$\sigma^2(W) = \sum_{i,j=1}^{N} \alpha_{ij}(q_{ij}(W) - d_{ij})^2 \quad (2)$$

where for $i, j = 1, \ldots, N$, $\alpha_{ij} > 0$ are known weights and

$$q_{ij}(W) = \|\mathbf{f}(\mathbf{x}_i) - \mathbf{f}(\mathbf{x}_j)\| = \|W^T(\Phi(\mathbf{x}_i) - \Phi(\mathbf{x}_j))\|. \quad (3)$$

The key issue in employing RBFs in MDS is to decide their centers. This includes the number of the centers to be used and then what they should be. This issue has not been well addressed in existing literature. For example,Webb [34] suggests to randomly choose the centers and then use an expensive cross-validation procedure to decide what they are. We have recently proposed Regularized Multidimensional Scaling with Radial basis function (RMDS) which takes a completely different route and regard the selection of the centers as a multi-task learning problem that has been widely studied in machine learning, see Argyriou et al. [1, 2].

In RMDS [29] a regularization term $\gamma\|W\|_{2,1}^2$ is added to the stress. The optimization model thus becomes

$$\min_{W \in \mathbb{R}^{d \times m}} P(W) = \sigma^2(W) + \gamma\|W\|_{2,1}^2 \quad (4)$$

here $(2,1)$-norm of W is obtained by first computing the 2-norms of the rows $W_{i:}$ and then the 1-norm of the vector $\|W_{1:}\|, \|W_{2:}\|, \ldots, \|W_{d:}\|$.

$$\|W\|_{2,1} = \|W_{1:}\| + \ldots + \|W_{d:}\|,$$

here $W_{i:}$ is the ith row of W. The $(2,1)$-norm favors a small number of nonzero rows in the matrix W, therefore ensuring that the common features (most effective centers) will be selected. The $(2,1)$-norm is nonsmooth (not differentiable) and the stress function $\sigma^2(W)$ is not convex. Hence, problem (6) is difficult to solve. So the majorization strategy and the techniques are nicely combined to handle the $(2,1)$-norm which led us to the function

$$Q(W, C) = \sigma^2(W) + \gamma\langle WW^T, C^\dagger\rangle. \quad (5)$$

RMDS uses data in unsupervised settings that means RMDS does not use any prior information of the dataset. This article is concerned on the supervised setting. Here we have incorporated the class information of some members of data to the RMDS model and discussed the improvement of Supervised Regularized Multidimensional Scaling (SRMDS) over RMDS. The objective function with the class separability term can be defined by :

$$J = (1 - \lambda)J_{SE} + \lambda J_{SP}$$

where J_{SE} is a class separability criterion, J_{SP} is a structure-preserving stress term and $\lambda (0 \leq \lambda < 1)$ determines the relative effects of these two terms. A value of $\lambda = 1.0$ gives the standard multidimensional scaling criterion with no class information. At the other extreme, $\lambda = 0$ means that emphasis is on class separability.

The rest of the article is organized as follows. In the next section, we have introduced notations and terminilogies that have been used through out this article. In Section 3, we will review RMDS model which is an improvement of the RBF-MDS model introduced by Webb [34] and On the way, we will also highlight an iterative block-majorization method which will be applied on our proposed model.

一、投稿

➢ 细节决定成败

- Wrong format = Wrong journal

IEEE for IEEE
elsevier for Elsevier
Springer for Springer

Deep Spatial-Spectral Global Reasoning Net
for Hyperspectral Image Denoising

Automatica

Distributed adaptive Newton methods with global superlinear convergence

inexact proximal ALM and ADMM for
osite programming

一、投稿

➢ 细节决定成败

- Inadvertent plagiarism → Serious damage

一、投稿

➢ 真正的学术造假是有十层境界！

第一境界：全文复制

咳，与其说全文复制，不如说改个名字。小学生的技能嘛，毫无技术难度，这个若还不会我就不说啥了。

但其后果最严重，一经发现立刻名誉扫地，还免不了遭到智商方面的鄙视。

第二境界：部分文本剽窃

这是学生作业中最常见的手段，操作起来比较简单。这一境界还分为I级和II级两个副本。I级就是复制了别人的文本但没有说明出处，一旦被发现，下场比全文复制也轻不到哪去。II级则是说明了出处，但没有指出这一段是直接照搬文本。

不过由于有查重软件的存在，前两种低级又严重的做法很少在发表刊物中见到了。接下来就开始有点难度了哦。

一、投稿

科研 论文 北京理工大学(BIT) 学术不端 科研热点

如何看待北京理工大学某硕士生被指几乎一字不差地抄袭论文?

电光幻影炼金术，香港中文大学 CS PhD在读

最新进展： 9 月 20 日北京理工大学进行了官方回复，校方已启动调查流程，北京理工大学自动化学院已经成立了工作小组调查此事。 投稿论文泄露并被抄袭挪...显示全部

关注问题 写回答 邀请回答 好问题 1306 85 条评论 分享 ···

374 个回答 默认排序

游凯超
清华软件学院博士研究生，人工智能/机器学习/迁移学习

专业 已有 1 人赠与了专业徽章 >

1,367 人赞同了该回答

到目前为止，还没有一篇技术分析帖，大家都是对着PDF截图在做猜想。趁着中秋假期，我来做一篇技术分析吧。

技术分析的主要来源是LaTeX源文件。**arxiv网站要求论文上传者必须上传LaTeX源码，而从这些源码里，能够找到非常丰富的信息。**我将两份LaTeX源码放在了清华云盘，方便大家下载。一份是原作者的，一份是抄袭者的。

在本回答中，我主要想搞清楚，**这次抄袭是来自PDF文件泄露，还是来自源码泄露。**

下面开始技术分析。

翻飞

我是一作，真的对不起王师兄，我们真的就是小鱼小虾，本身已经毕业了自己在家弄些乱七八糟的东西看，也没有导师指导，我也不明白社区什么的，我以为和bbs那些一样，看见了就可以挂在上面，我不懂这些，我的朋友可能也就以为我发给他的玩意就是原本的写的什么东西，间接把朋友推到了火坑，他现在已经被院长通知要做退学处理了，求求各位不要再把事情进一步扩大了，我们真的不是什么圈里的超级学术大臭虫，我们寒窗苦读很多年从农村娃混出来，真的，王师兄要我砍一只手都行，我真的是初见不知道这些东西，我对学术有无止境的向往，我去找地方给人打工，给人做东西，我也不求产出，我就想见识见识最好的东西是什么样子，别的我也不管，我就一门心思写代码，优化，git push，我特别喜欢这种感觉，但是整个流程我不清楚，不懂，不知道，我求求各位高抬贵手放过我们吧，我们真的没有任何其他意思，请让我们活下去，我们还想给我们的家庭带去希望，求求各位了。

刚刚

一、投稿

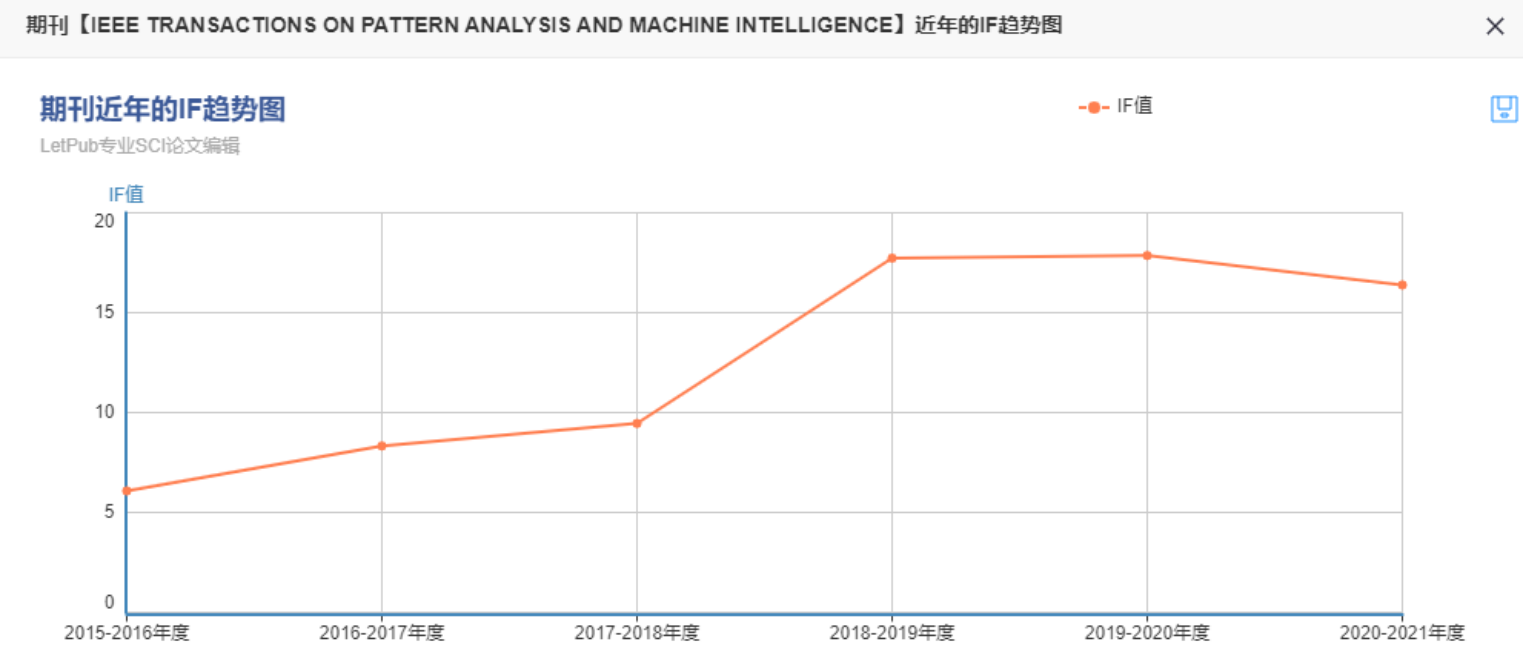
➢ 选择期刊

- 不屑给Nature和Science投稿，这个海龟差点败给影响因子！

一、投稿

➢ 选择期刊

- 不屑给Nature和Science投稿，这个海龟差点败给影响因子！
- 如何将文章发表在高影响因子的期刊上？



一、投稿

➢ 选择期刊

- 不屑给Nature和Science投稿，这个海龟差点败给影响因子！
- 如何将文章发表在高影响因子的期刊上？
- 高IF还是高质量？人才评价遭遇社会共谋困境！

（三）优秀青年博士

人才层次		科研启动费	安家费	其他待遇
A 类	自然科学学科：以第一作者或通讯作者发表 SCI 二区论文 5 篇以上。材料类学科的博士由学校单独研究。 社会科学学科：以第一作者或通讯作者公开发表我校认定的高水平期刊论文 5 篇以上。	理工科 30 万元/社科 15 万元	80 万	符合河北省“名校英才入冀”计划博士享受 5 年 1000 元/月补贴；年薪制 20 万+/年。
B 类	自然科学学科：以第一作者或通讯作者发表 SCI、EI 检索本专业学术论文 3 篇以上，其中博士点所在学科和省级重点学科 SCI 二区以上论文不少于 1 篇，其他学科不作分区要求； 社会科学学科：以第一作者或通讯作者在 CSSCI 来源期刊和我校认定的高水平期刊发表本专业学术论文 3 篇以上。	理工科 10 万元/社科 5 万元	38-70 万	符合河北省“名校英才入冀”计划博士享受 5 年 1000 元/月补贴；符合学校有关规定者可以申请实行协议工资。

一、投稿

➢ 选择期刊

AUTOMATICA期刊基本信息

基本信息	
期刊名字	AUTOMATICA AUTOMATICA

登录查看中科院JCR分区趋势图

	大类学科		小类学科		Top期刊	综述期刊
中科院SCI期刊分区（2021年12月最新基础版）	工程技术	2区	AUTOMATION & CONTROL SYSTEMS 自动化与控制系统 ENGINEERING, ELECTRICAL & ELECTRONIC 工程：电子与电气	2区 2区	是	否
中科院SCI期刊分区（2021年12月最新升级版）	计算机科学	2区	AUTOMATION & CONTROL SYSTEMS 自动化与控制系统 ENGINEERING, ELECTRICAL & ELECTRONIC 工程：电子与电气	2区 2区	是	否
中科院SCI期刊分区（2020年12月旧的升级版）	计算机科学	2区	AUTOMATION & CONTROL SYSTEMS 自动化与控制系统 ENGINEERING, ELECTRICAL & ELECTRONIC	2区 2区	是	否

投稿经验：
本来老板让投cybernetics的，结果自己不甘心偷偷地投了这个,然后竟然让大修，一周后接收，后来可把老板给乐坏了！

投稿经验：
审稿一般在2-3个月，大部分意见都比较合理，对数学要求高，需要对研究方向的前沿很清晰，最重要的方然还是创新性。

投稿经验：
同意楼上的说法，在此把automatica灌水topic如下：finite time stability, time delay systems, sliding mode control, filtering 之类的

投稿经验：
做的核弹控制方面的工作，投稿2天直接接受。怕我炸了编辑部打电话告诉我直接录用，期间还拍了我半个多小时的马屁。这期刊水平也就那样吧，马马虎虎。

一、投稿

➢ 选择期刊

期刊名字

ANNALS OF MATHEMATICS

ANN MATH

中科院SCI期刊分区（2021年12月最新基础版）	大类学科	小类学科	Top期刊	综述期刊
	数学 1区	MATHEMATICS 数学 1区	是	否

中科院SCI期刊分区（2021年12月最新升级版）	大类学科	小类学科	Top期刊	综述期刊
	数学 1区	MATHEMATICS 数学 1区	是	否

中科院SCI期刊分区（2020年12月旧的升级版）	大类学科	小类学科	Top期刊	综述期刊
	数学 1区	MATHEMATICS 数学 1区	是	否

投稿经验：

普林斯顿大学教授andrew wiles证明费马最终定理的文章就发表在此期刊。《modular elliptic curves and fermat's last theorem》95年443-552/

投稿经验：

差不多各学科所有期刊里最难的了，难度远大于science、nature那些名刊。不少大牌教授能发十几、二十篇cns。但目前为止，似乎没人发过两篇以上这个。发一篇基本可以评院士了。

一、投稿

➢ 选择期刊

匿名用户

2 人赞同了该回答

@littlewood，这统计相当给力啊，之前找半天都没见过类似数据。其实我更好奇，华人发四大累计数量的排行榜，谁来统计下？以及排名前列的人都是谁？top3是哪些人？陶、丘成桐、听说田刚发了20几篇？

统计了下，截止到2021.10，陶33篇，丘29篇，田的数据没找到。目前的华人第一应该是陶了

新增：田25篇。算起来田的四大数不比他老师丘差啊，丘这么黑田，有嫉妒因素吧

编辑于 2022-02-20 20:56

10.陈省身 6篇-论文链接

https://www.jstor.org/stable/1969650?origin=crossref

https://www.jstor.org/stable/1969943?origin=crossref

https://www.jstor.org/stable/1971013?refreqid=excelsior%3Afb8a24bc098f0daaf6ae4f4...

https://www.jstor.org/stable/1971312?refreqid=excelsior%3Ab8daf28a04118557fcc8a7...

https://www.jstor.org/stable/2118643?refreqid=excelsior%3A2dc6170a964552be5e1d8...

https://www.jstor.org/stable/2118596?refreqid=excelsior%3Acaac66283f4d11a4d11256...

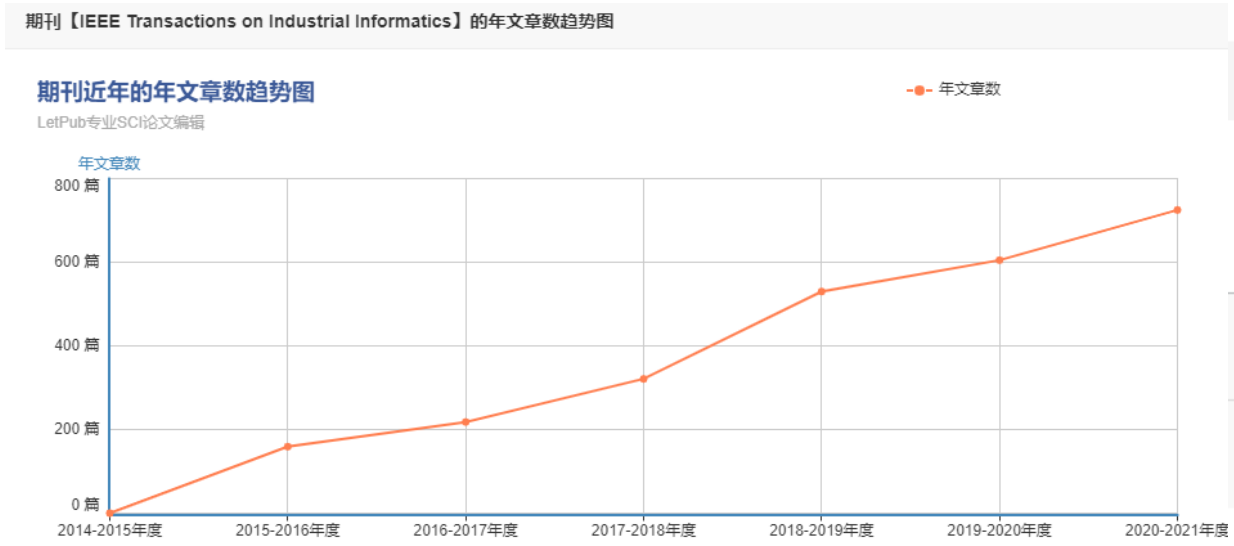
陈省身_百度百科

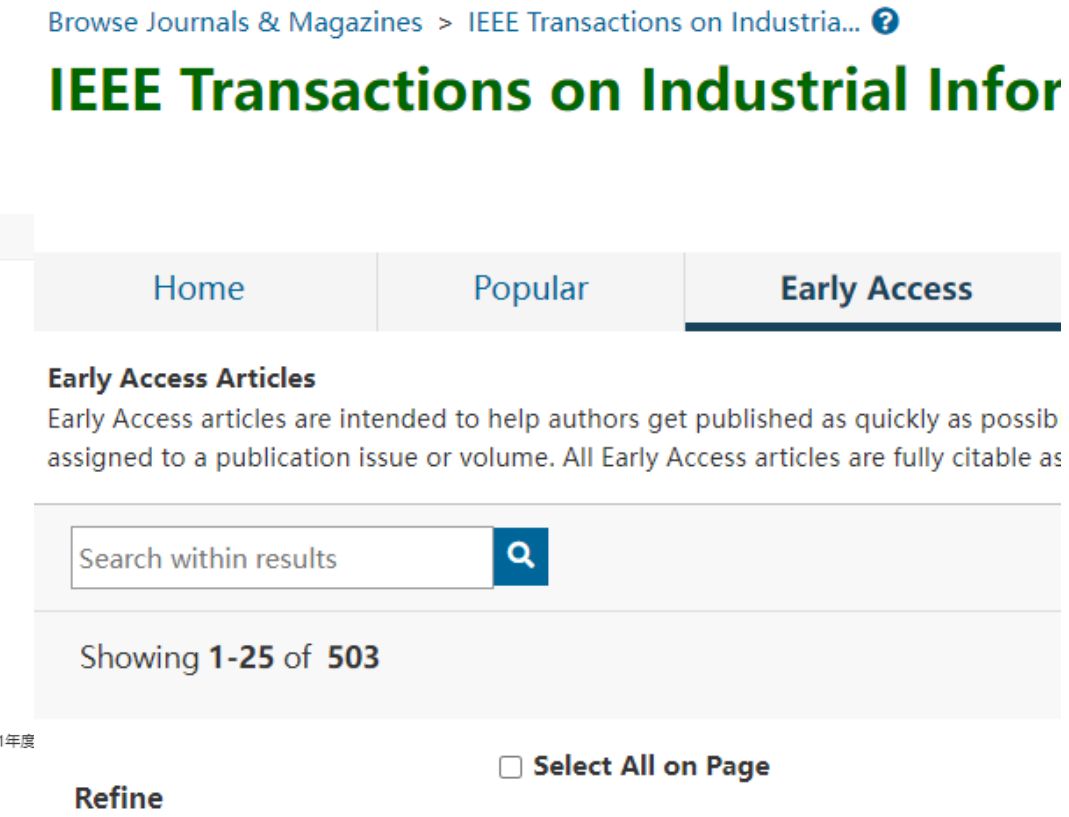
一、投稿

- 选择期刊（个人观点）

一、投稿

➢ 选择期刊（个人观点）

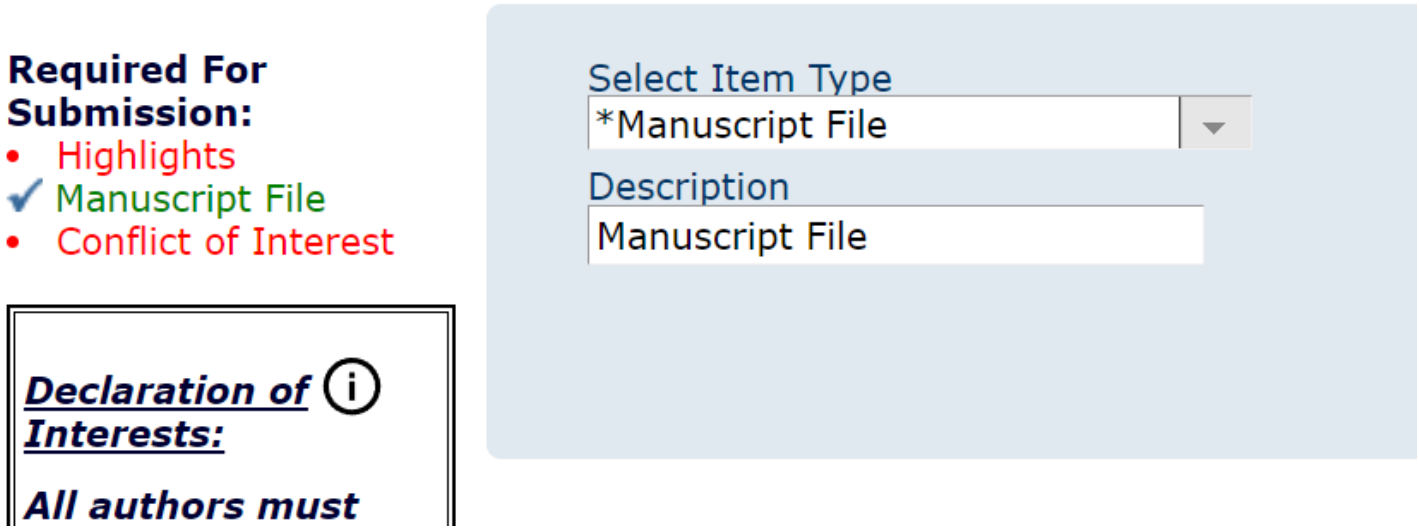




一、投稿

➢ The Cover Letter（附函）

- 一封优秀附函要达成什么目标?



一、投稿

➢ The Cover Letter（附函）

- 一封优秀附函要达成什么目标?

从根本上讲，附函的意义在于影响编辑的决策，以便将你的稿件顺利送交同行评审。

一、投稿

➢ The Cover Letter（附函）

Dear XXX Editor,

I would like to submit my joint manuscript with colleagues entitled XXX for possible publication in XXX.

……

Thank you very much for your consideration and I look forward to your editorial decision.

Sincerely yours,
XXX

- 收信编辑
- 文章题目与杂志名称
- 研究背景、理论基础以及意义
- 声明或说明
- 通讯方式

一、投稿

➢ The Cover Letter（附函）

Dear XXX Editor,

I would like to submit my joint manuscript with colleagues entitled XXX for possible publication in XXX.

……

Thank you very much for your consideration and I look forward to your editorial decision.

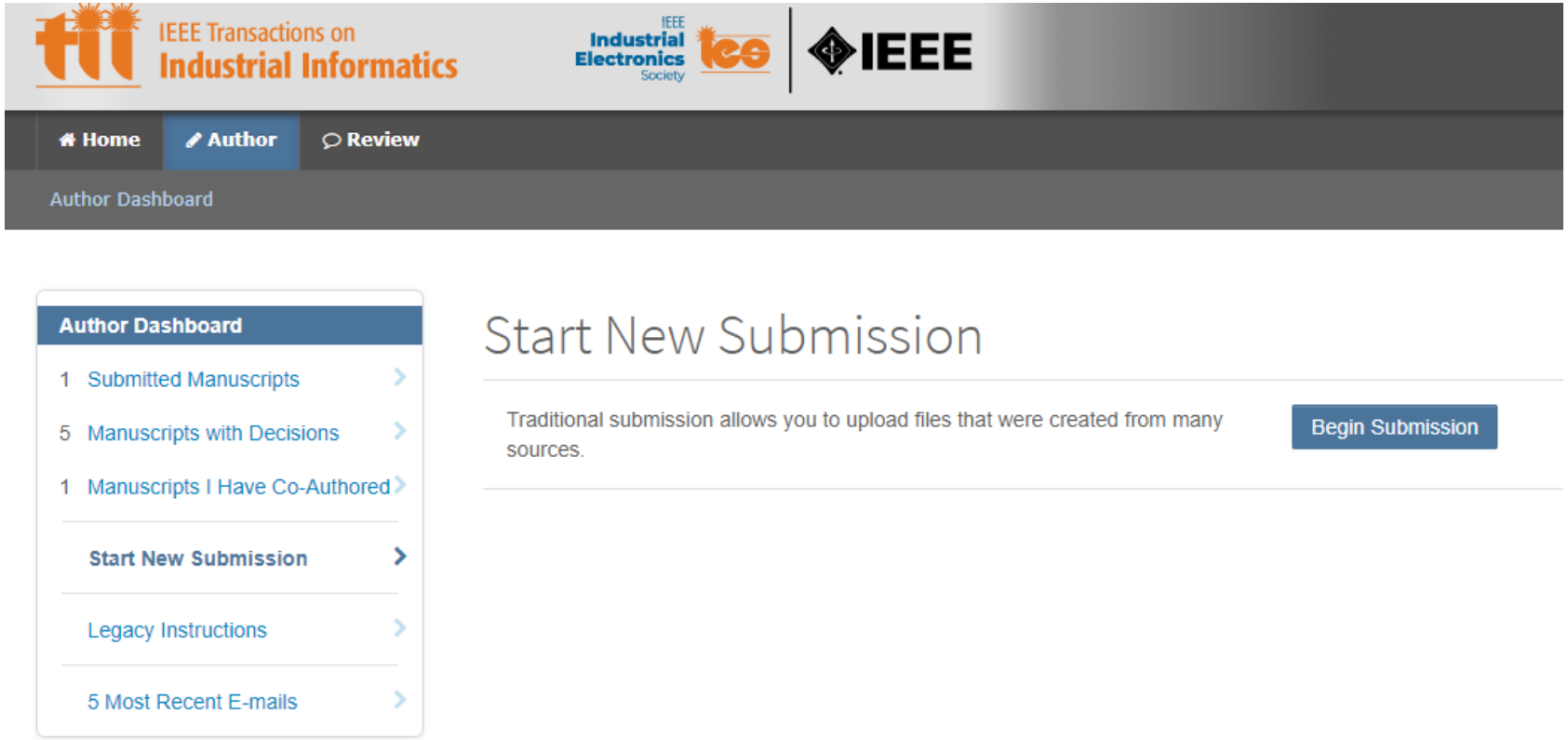
Sincerely yours,
XXX

➢ 注意事项

- 不要重复摘要、引言、结论的内容！
- 如果是二次投稿，仔细检查！
- 落款务必是通讯作者???

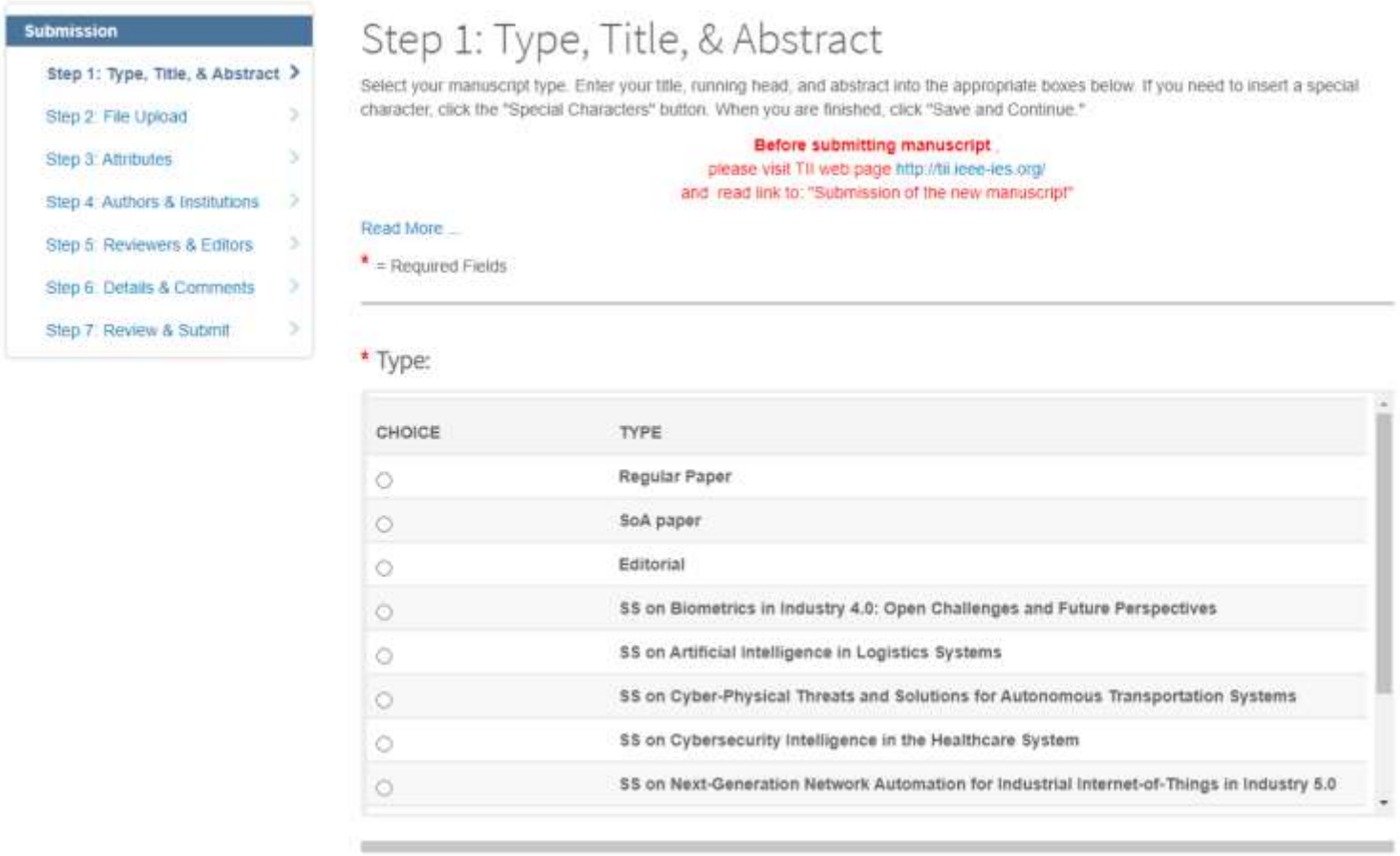
一、投稿

➢ 流程


IEEE Transactions on
Industrial Informatics
IEEE
Industrial
Electronics
Society
IEEE
Home
Author
Review
Author Dashboard
Author Dashboard
1 Submitted Manuscripts
5 Manuscripts with Decisions
1 Manuscripts I Have Co-Authored
Start New Submission
Legacy Instructions
5 Most Recent E-mails
Start New Submission
Traditional submission allows you to upload files that were created from many sources.
Begin Submission

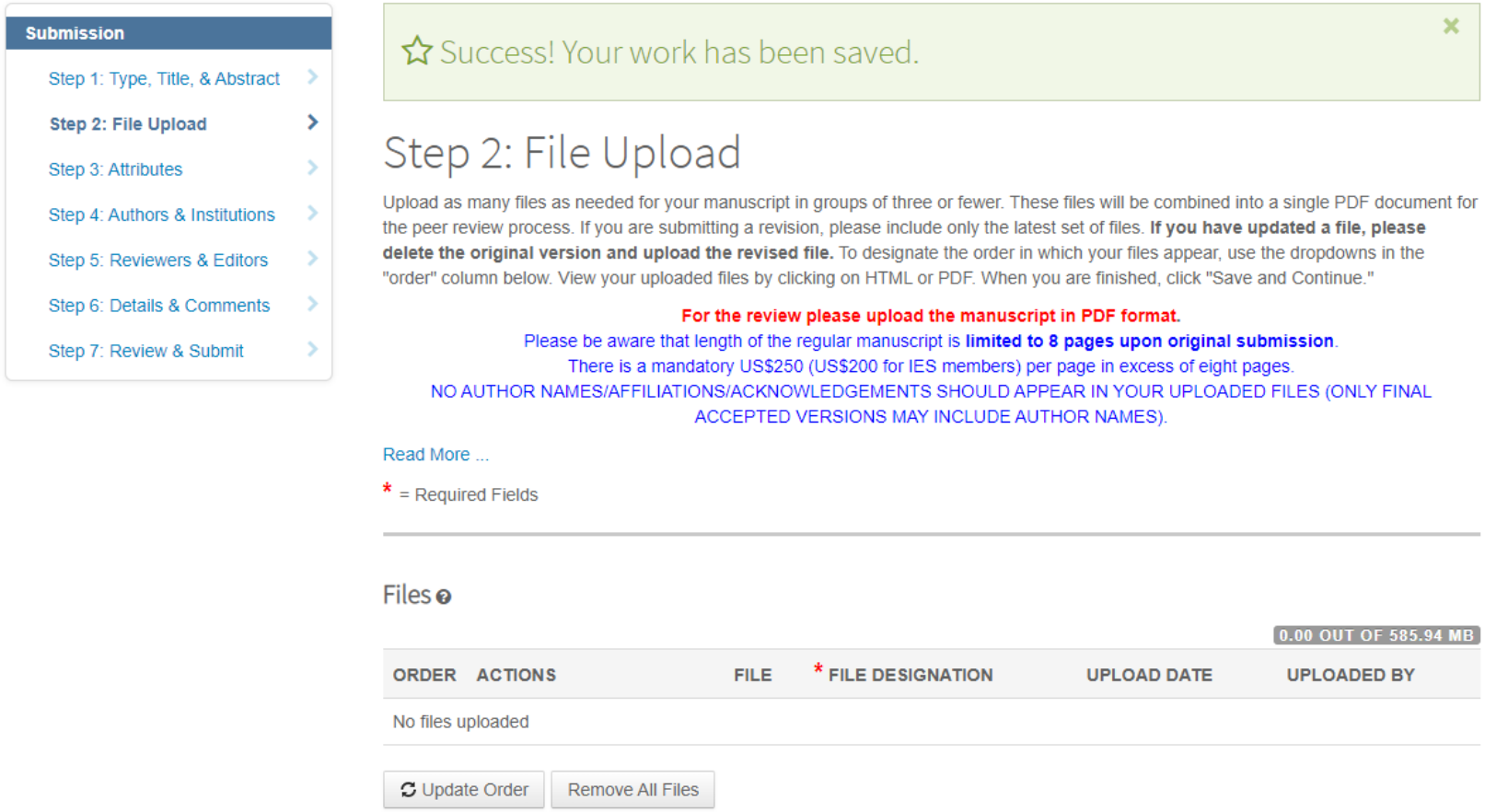
一、投稿

➢ 流程：第一步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Step 1: Type, Title, & Abstract
Select your manuscript type. Enter your title, running head, and abstract into the appropriate boxes below. If you need to insert a special character, click the "Special Characters" button. When you are finished, click "Save and Continue."
Before submitting manuscript ,
please visit TII web page http://tii.ieee-ies.org/
and read link to: "Submission of the new manuscript"
Read More ...
* = Required Fields
* Type:
CHOICE
TYPE
Regular Paper
SoA paper
Editorial
SS on Biometrics in Industry 4.0: Open Challenges and Future Perspectives
SS on Artificial Intelligence in Logistics Systems
SS on Cyber-Physical Threats and Solutions for Autonomous Transportation Systems
SS on Cybersecurity Intelligence in the Healthcare System
SS on Next-Generation Network Automation for Industrial Internet-of-Things in Industry 5.0

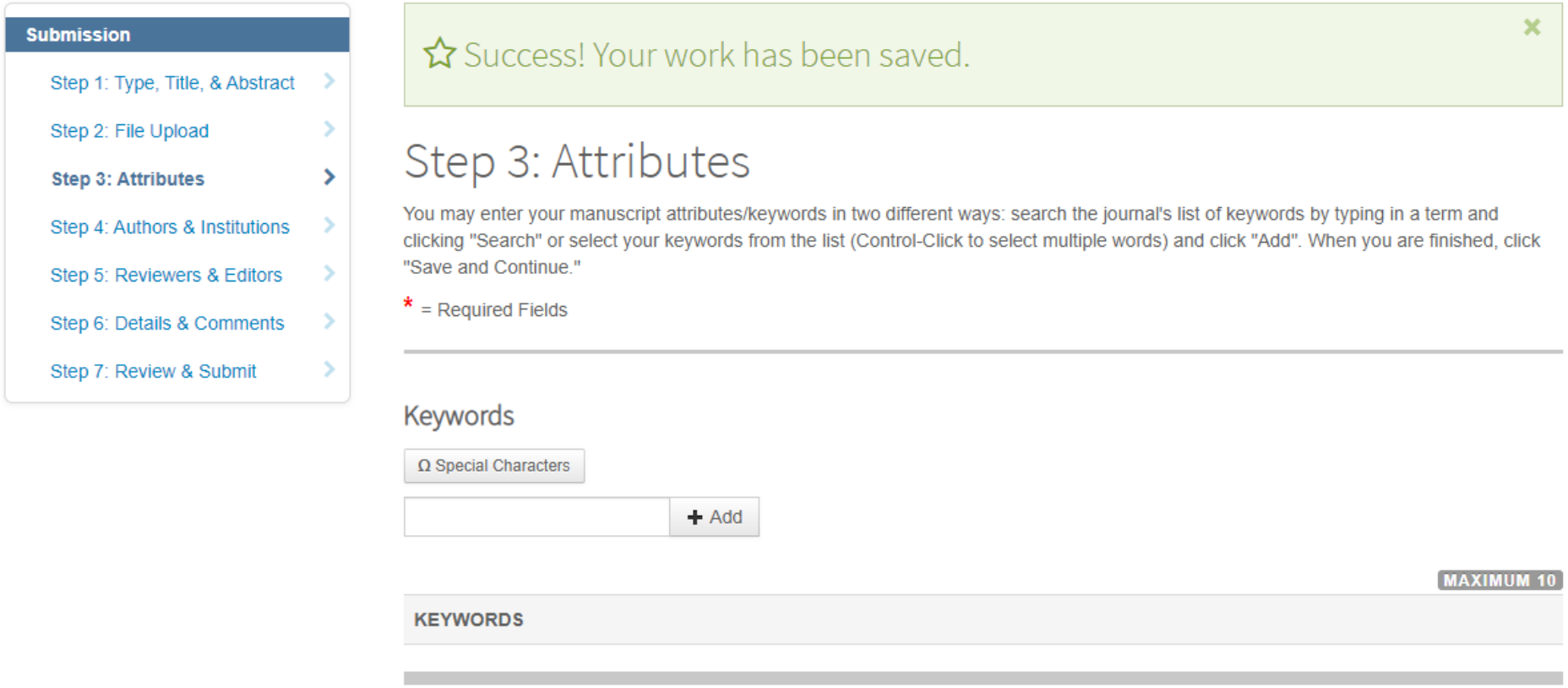
一、投稿

➢ 流程：第二步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Success! Your work has been saved.
Step 2: File Upload
Upload as many files as needed for your manuscript in groups of three or fewer. These files will be combined into a single PDF document for the peer review process. If you are submitting a revision, please include only the latest set of files. If you have updated a file, please delete the original version and upload the revised file. To designate the order in which your files appear, use the dropdowns in the "order" column below. View your uploaded files by clicking on HTML or PDF. When you are finished, click "Save and Continue."
For the review please upload the manuscript in PDF format.
Please be aware that length of the regular manuscript is limited to 8 pages upon original submission.
There is a mandatory US$250 (US$200 for IES members) per page in excess of eight pages.
NO AUTHOR NAMES/AFFILIATIONS/ACKNOWLEDGEMENTS SHOULD APPEAR IN YOUR UPLOADED FILES (ONLY FINAL ACCEPTED VERSIONS MAY INCLUDE AUTHOR NAMES).
Read More ...
* = Required Fields
Files
0.00 OUT OF 585.94 MB
ORDER ACTIONS FILE * FILE DESIGNATION UPLOAD DATE UPLOADED BY
No files uploaded
Update Order
Remove All Files

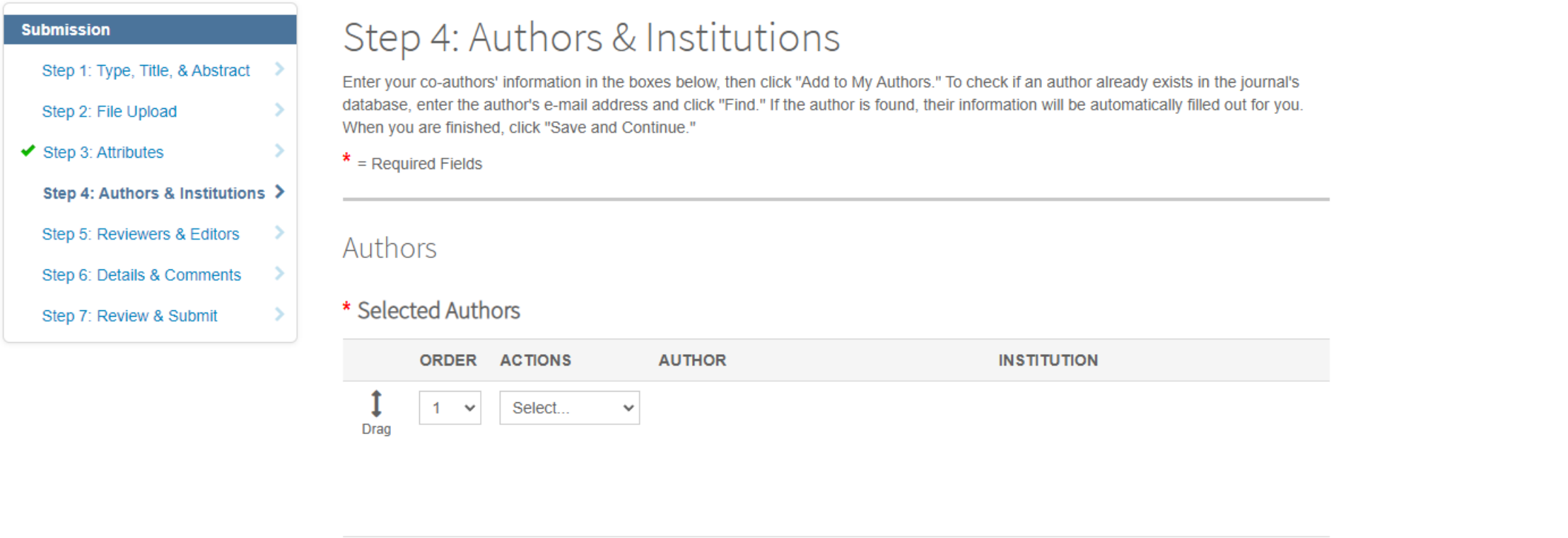
一、投稿

➢ 流程：第三步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Success! Your work has been saved.
Step 3: Attributes
You may enter your manuscript attributes/keywords in two different ways: search the journal's list of keywords by typing in a term and clicking "Search" or select your keywords from the list (Control-Click to select multiple words) and click "Add". When you are finished, click "Save and Continue."
* = Required Fields
Keywords
Ω Special Characters
+ Add
MAXIMUM 10
KEYWORDS

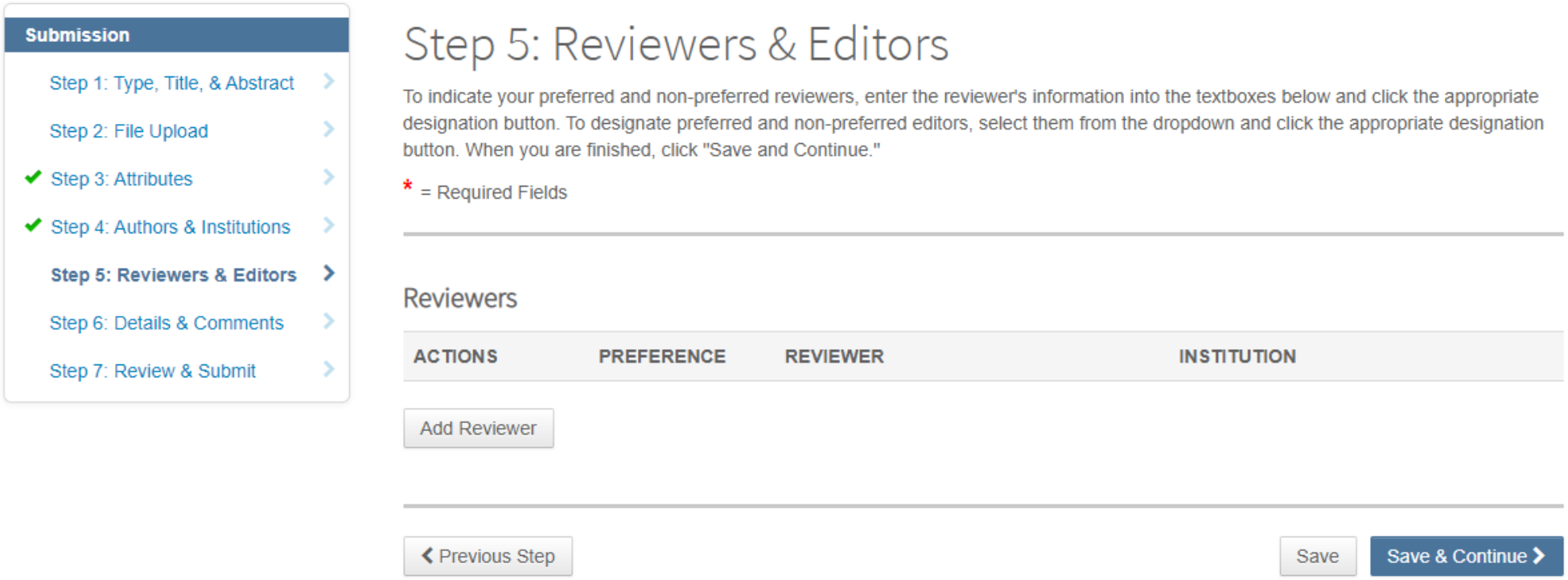
一、投稿

➢ 流程：第四步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Step 4: Authors & Institutions
Enter your co-authors' information in the boxes below, then click "Add to My Authors." To check if an author already exists in the journal's database, enter the author's e-mail address and click "Find." If the author is found, their information will be automatically filled out for you. When you are finished, click "Save and Continue."
* = Required Fields
Authors
* Selected Authors
ORDER
ACTIONS
AUTHOR
INSTITUTION
Drag
1
Select...

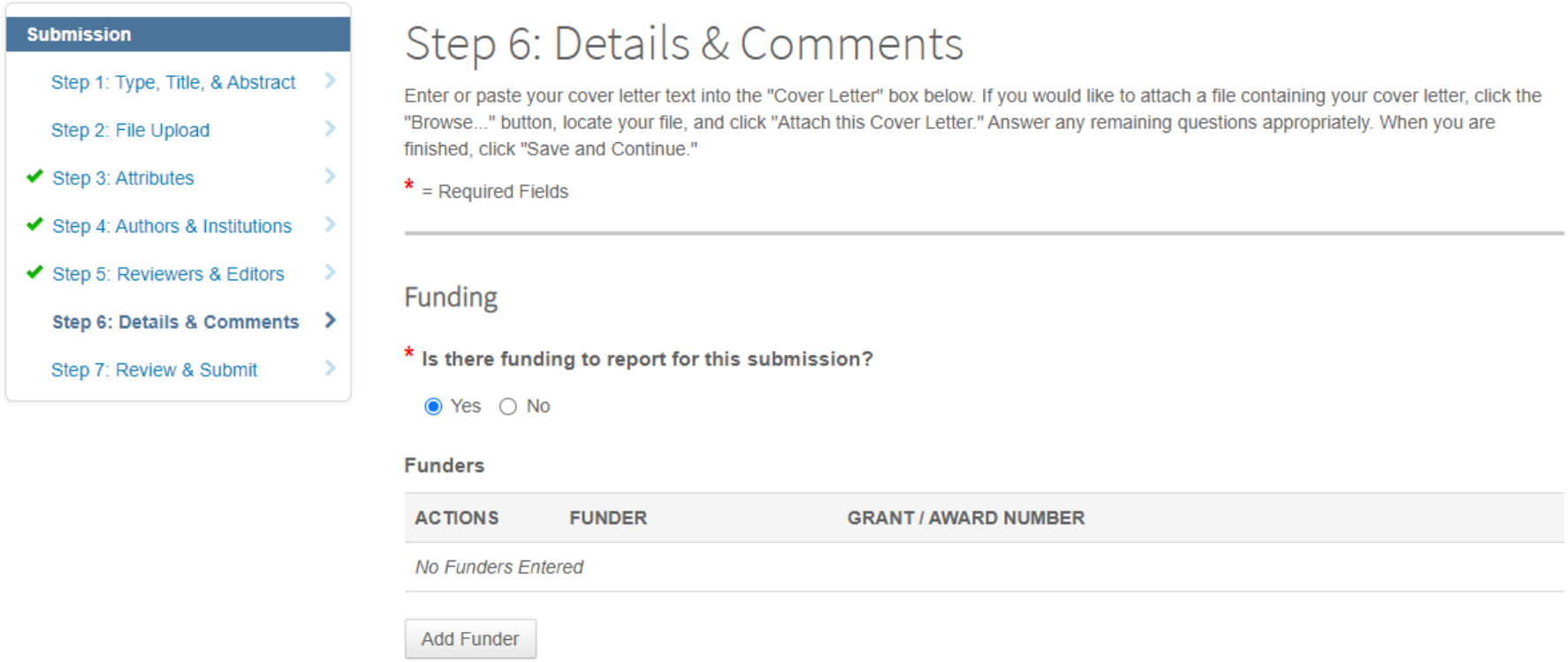
一、投稿

➢ 流程：第五步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Step 5: Reviewers & Editors
To indicate your preferred and non-preferred reviewers, enter the reviewer's information into the textboxes below and click the appropriate designation button. To designate preferred and non-preferred editors, select them from the dropdown and click the appropriate designation button. When you are finished, click "Save and Continue."
* = Required Fields
Reviewers
ACTIONS
PREFERENCE
REVIEWER
INSTITUTION
Add Reviewer
Previous Step
Save
Save & Continue

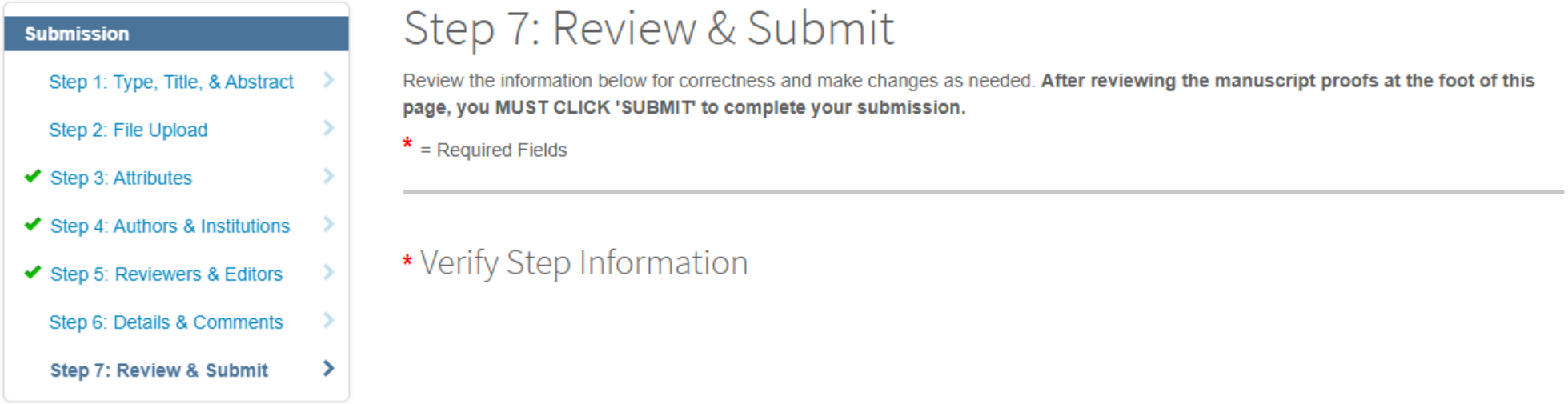
一、投稿

➢ 流程：第六步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Step 6: Details & Comments
Enter or paste your cover letter text into the "Cover Letter" box below. If you would like to attach a file containing your cover letter, click the "Browse..." button, locate your file, and click "Attach this Cover Letter." Answer any remaining questions appropriately. When you are finished, click "Save and Continue."
* = Required Fields
Funding
* Is there funding to report for this submission?
Yes
No
Funders
ACTIONS
FUNDER
GRANT / AWARD NUMBER
No Funders Entered
Add Funder

一、投稿

➢ 流程：第七步


Submission
Step 1: Type, Title, & Abstract
Step 2: File Upload
Step 3: Attributes
Step 4: Authors & Institutions
Step 5: Reviewers & Editors
Step 6: Details & Comments
Step 7: Review & Submit
Step 7: Review & Submit
Review the information below for correctness and make changes as needed. After reviewing the manuscript proofs at the foot of this page, you MUST CLICK 'SUBMIT' to complete your submission.
* = Required Fields
* Verify Step Information

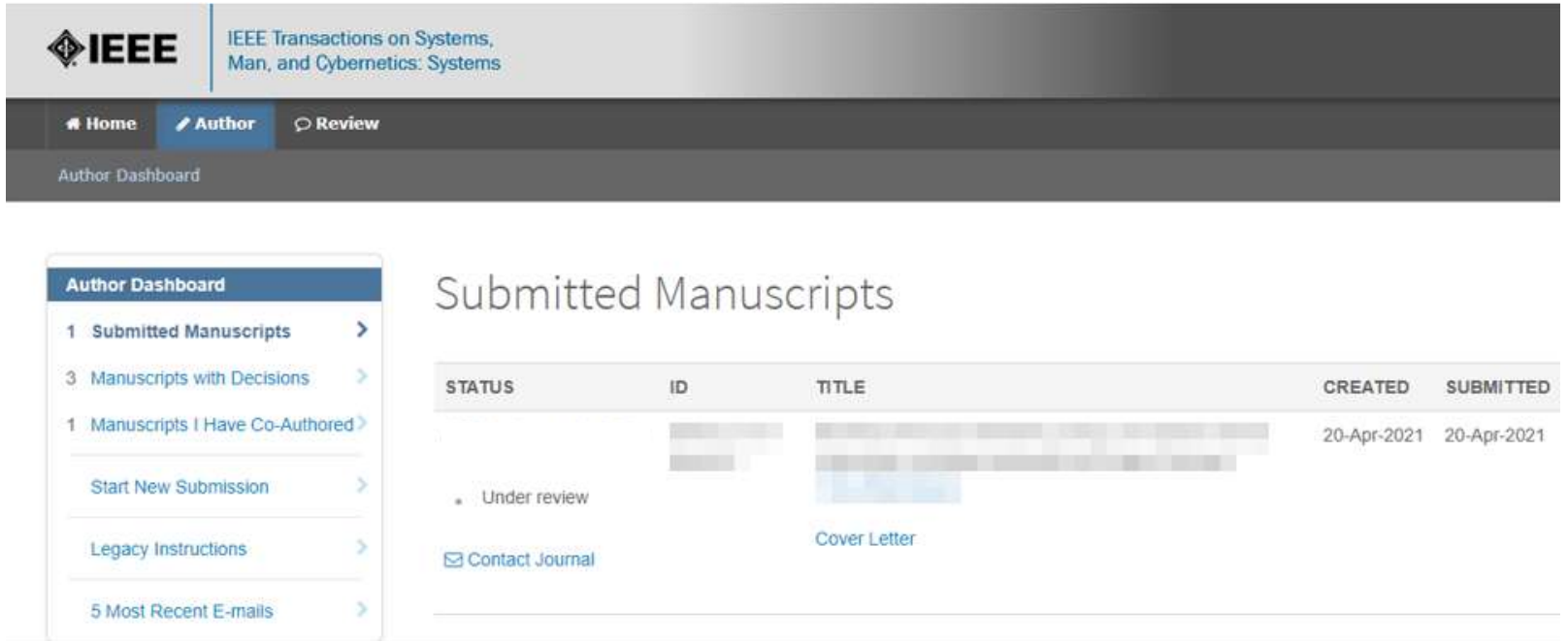
一、投稿

➢ 起初每天刷刷刷

投稿初期，每天狂刷网页，紧盯着 status，等待其变化，Submited to Journal/Submited Complated/Awaitng Coordinator Editor Processing, With Editor, Reviewer Invited/Reviewer Assigned, Under Reiview, Minor Revision/Major Rvision, Resubmited to Journal, Final Decision, Accepted, Rejected....

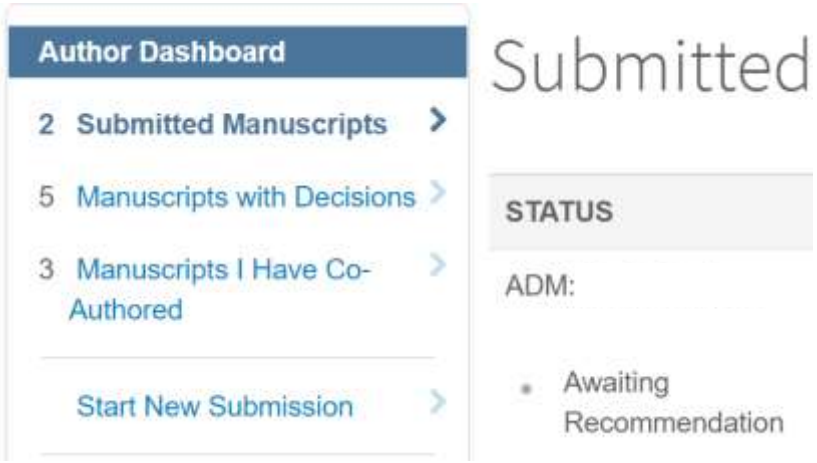
一、投稿

- 漫长的等待


IEEE
IEEE Transactions on Systems, Man, and Cybernetics: Systems
Home
Author
Review
Author Dashboard
Author Dashboard
1 Submitted Manuscripts
3 Manuscripts with Decisions
1 Manuscripts I Have Co-Authored
Start New Submission
Legacy Instructions
5 Most Recent E-mails
Submitted Manuscripts
STATUS
ID
TITLE
CREATED
SUBMITTED
20-Apr-2021
20-Apr-2021
Under review
Cover Letter
Contact Journal

一、投稿

➢ 真正的煎熬


Author Dashboard
2 Submitted Manuscripts
5 Manuscripts with Decisions
3 Manuscripts I Have Co-Authored
Start New Submission
Submitted
STATUS
ADM:
Awaiting Recommendation

这日子好难过

提纲

一 投稿

二 审稿

三 回复

四 其他

二、审稿

➢ 重要人物

- First author
- Corresponding author
- Others

- EIC： Editors in Chief

  主编，权力最大
- AE：Associate Editors

  副编辑，对你的稿件来说，此人非常重要
- ADM：Administrator

  相当于编辑部的执行编辑

二、审稿

➢ 重要人物

- EIC： Editors in Chief

主编，权力最大

- AE：Associate Editors

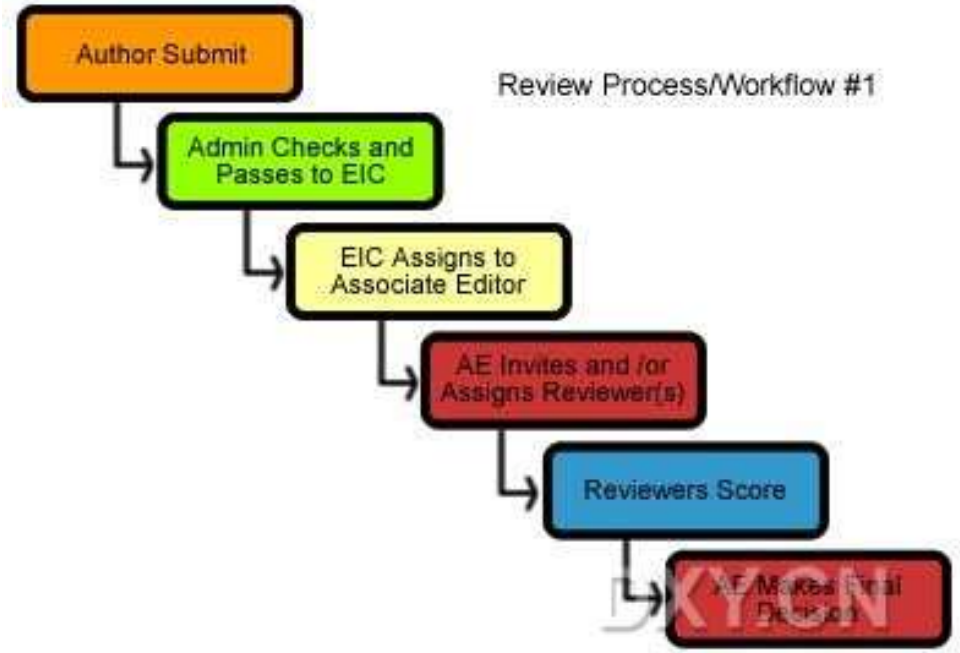
副编辑，对你的稿件来说，此人非常重要

- ADM：Administrator

相当于编辑部的执行编辑

- Reviewers

审稿人



二、审稿

- 投稿-被拒

二、审稿

➢ 投稿-被拒

Subject:

Body:

[redacted]

Industrial Informatics (TII). Although your manuscript is of interest and technical merit, I regret to inform you that we will not be able to consider your manuscript in its present form for TII.

In order to deal with the large number of submissions to TII in a timely manner, all the manuscripts we receive are initially screened by the Editor-in-Chief and/or Associate Editors. Given the fact that TII can publish only a small fraction of the manuscripts received each year, we decide carefully through an early stage of the reviewing process which papers are likely to be suitable for publishing in TII after comprehensive peer-review.

The paper is not suitable for TII.

We understand you may be disappointed by this decision, but hope that our rapid response will enable you to pursue other options without undue delay.

Thank you again for the opportunity for us to read your manuscript. We hope that you will consider submitting your work to TII again in the future.

With kind regards,

Prof. Ren C. Luo
Editor-in-Chief

二、审稿

➢ 投稿-被拒

IEEE Publication Recommender™
Find the best match for your scholarly article
IEEE
Choose a search type and let Publication Recommender do the work!
Both Periodicals and Conferences
Periodicals only
Conferences only
Enter keywords, key phrases, or article title
Keywords you entered:
Extract keywords from your article
Enter your abstract or drag your article file here (PDF, DOC, DOCX, TEX).
+ ADD YOUR FILE
Narrow by date:
(Optional)
I would like to publish before:
Update Recommendation

二、审稿

➢ 投稿-被拒

Periodicals: (100 results) **Sort By:** Keyword Match (relevance)

Title	Open Access Availability	Impact Factor	Submission to Publication Time in *Xplore*
Industry Applications, IEEE Transactions on	Open Access Available	3.654	27.3 Weeks
IEEE Control Systems Letters	Open Access Available	Not yet available	13.6 Weeks
Cybernetics, IEEE Transactions on	Open Access Available	11.448	35.6 Weeks
Automatic Control, IEEE Transactions on	Open Access Available	5.792	31.6 Weeks
Signal Processing, IEEE Transactions on	Open Access Available	4.931	36.8 Weeks

Conferences: (214 results) **Sort By:** Keyword Match (relevance) SHOW MAP

Title | Location	Country	Abstract Submission Deadline	Conference Date
2022 7th International Conference on Computational Intelligence and Applications (ICCIA) **Location:** Nanjing Tech University, ollege of Electrical Engineering and Control Science, Nanjing, China	China		24-26 Jun 2022

二、审稿

➢ 投稿-送审-被拒

Publication decision on Version 1 — May 4, 2021 07:17:21 Pacific Time	
Decision	Reject - may not be resubmitted
Cover message	I regret to inform you that based on these reviews and the advice of the Associate Editor concerned, the decision is to reject your paper. The essential reasons for this decision are given in the report by the associate editor. I should, of course, like to thank you for submitting your paper to Automatica. Sincerely yours Torsten Soderstrom
Report	The manuscript has been evaluated by three reviewers. Two of them are very critical. The main reason appears to be the writing quality and presentation of the results which demands a complete rewriting of the paper to be further considered for publication. Moreover, the superiority of the proposed approach was not verified nor demonstrated throughout the manuscript. In conclusion, the work may contain publishable material but the paper requires a total rewriting and reorganization that goes, in my opinion, beyond the "reject provisionally".

二、审稿

- 投稿-送审-大修-被拒

科研 论文 期刊论文

第一篇论文多次被拒稿是什么体验?

后续：第一篇改投两次后中了，第二篇改投两次后拟录用，可以毕业了，但是始终还没尝试过投论文“一发入魄”的酸爽。不过说实话，慢慢的，也开始了解学术圈子里面...显示全部

关注问题 写回答 邀请回答 好问题 147 4 条评论 分享 ···

关注者 1,835

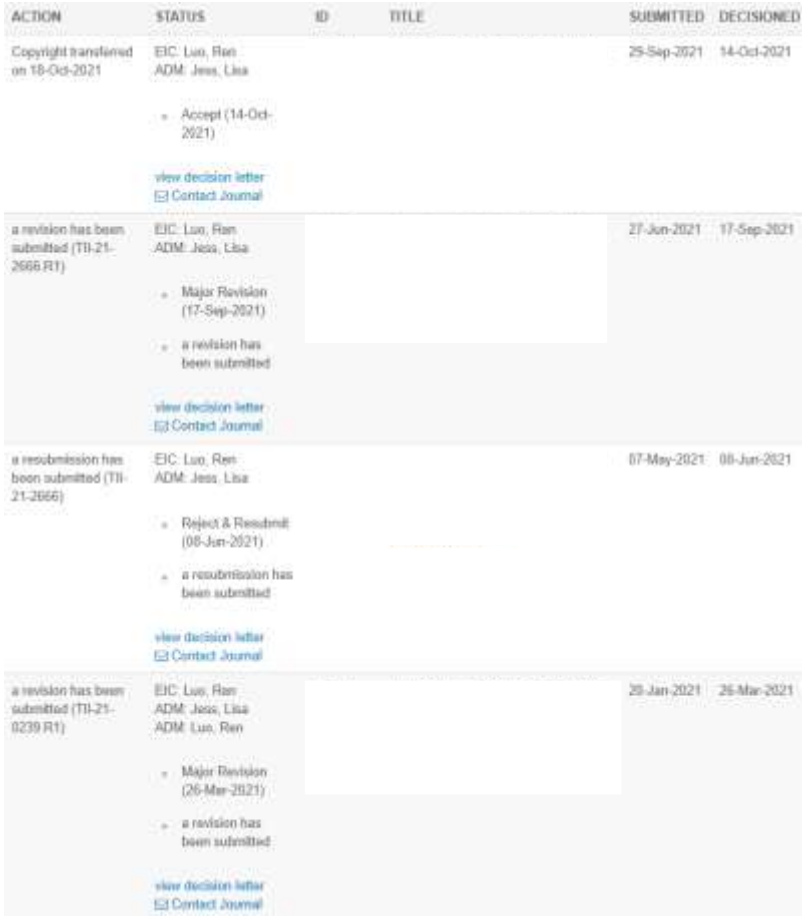
被浏览 1,606,097

残酷：只能改投!

二、审稿

➢ 投稿-送审-大修-小修-接收

- 20-Jan-2021： Submit
- 26-Mar-2021： Major Revision
- 07-May-2021： Resubmit
- 08-Jun-2021： Reject & Resubmit
- 27-Jun-2021： Resubmit
- 17-Sep-2021： Major Revision
- 29-Sep-2021： Resubmit
- 14-Oct-2021： Accept



ACTION	STATUS	ID	TITLE	SUBMITTED	DECISIONED
Copyright transferred on 18-Oct-2021	EIC: Luo, Ren ADM: Jess, Lisa • Accept (14-Oct-2021) view decision letter Contact Journal			29-Sep-2021	14-Oct-2021
a revision has been submitted (TII-21-2666 R1)	EIC: Luo, Ren ADM: Jess, Lisa • Major Revision (17-Sep-2021) • a revision has been submitted view decision letter Contact Journal			27-Jun-2021	17-Sep-2021
a resubmission has been submitted (TII-21-2666)	EIC: Luo, Ren ADM: Jess, Lisa • Reject & Resubmit (08-Jun-2021) • a resubmission has been submitted view decision letter Contact Journal			07-May-2021	08-Jun-2021
a revision has been submitted (TII-21-0239 R1)	EIC: Luo, Ren ADM: Jess, Lisa ADM: Luo, Ren • Major Revision (26-Mar-2021) • a revision has been submitted view decision letter Contact Journal			29-Jan-2021	26-Mar-2021

二、审稿

➢ 投稿-送审-大修-小修-接收

- 20-Jan-2021： Submit
- 26-Mar-2021： Major Revision
- 07-May-2021： Resubmit
- 08-Jun-2021： Reject & Resubmit
- 27-Jun-2021： Resubmit
- 17-Sep-2021： Major Revision
- 29-Sep-2021： Resubmit
- 14-Oct-2021： Accept

Manuscript received March 30, 2020; accepted April 12, 2020. Date of publication April 15, 2020; date of current version December 21, 2020. This

Manuscript received September 29, 2021; revised November 6, 2021; accepted November 10, 2021. Date of publication November 18, 2021; date of current version January 24, 2022. This work was supported in part by the

二、审稿

➢ 投稿-送审-大修-小修-接收

- 20-Jan-2021： Submit
- 26-Mar-2021： Major Revision
- 07-May-2021： Resubmit
- 08-Jun-2021： Reject & Resubmit
- 27-Jun-2021： Resubmit
- 17-Sep-2021： Major Revision
- 29-Sep-2021： Resubmit
- 14-Oct-2021： Accept

连拒七次后终于可以烫头了

Initial Date Submitted	Status Date	Current Status
05 Aug 2020	19 Nov 2020	Accept

二、审稿

➢ 审稿内容

Summary of Evaluation
○ Excellent
○ Good
○ Fair
○ Poor

Referee Report for Author							
Organization	(Poor)	○ 1	○ 2	○ 3	○ 4	○ 5	(Excellent)
Clarity	(Low)	○ 1	○ 2	○ 3	○ 4	○ 5	(High)
Length	(Too Long)	○ 1	○ 2	○ 3	○ 4	○ 5	(Too Short)
References	(Incomplete)	○ 1	○ 2	○ 3	○ 4	○ 5	(Adequate)
Correctness	(Incorrect)	○ 1	○ 2	○ 3	○ 4	○ 5	(Correct)
Significance	(Low)	○ 1	○ 2	○ 3	○ 4	○ 5	(High)
Originality	(Low)	○ 1	○ 2	○ 3	○ 4	○ 5	(High)
Attachments	(Unnecessary)	○ 1	○ 2	○ 3	○ 4	○ 5	(Helpful)
If Survey Coverage	(Shallow)	○ 1	○ 2	○ 3	○ 4	○ 5	(Broad)
Contribution	(No New Results)	○ 1	○ 2	○ 3	○ 4	○ 5	(Significant)

二、审稿

➢ 审稿内容

What are the contributions of the paper?

What are the additional ways in which the paper could be improved?

Confidential Comments to the Editor

ΩSpecial Characters

Comments to the Author

ΩSpecial Characters

二、审稿

➢ 审稿内容

Recommendation

- ○ Accept
- ○ Accept With Minor Changes
- ○ Prepare A Major Revision
- ○ Reject & Resubmit
- ○ Reject

二、审稿

➢ 审稿意见(EIC)

Dear XXX:

Manuscript ID … entitled …which you submitted to the …, has been reviewed.

The Associate Editor and Reviewers have recommended publication, but also suggest some minor revisions to your manuscript. Therefore, I invite you to respond to the Reviewers' Comments, included at the bottom of this letter, and revise your manuscript accordingly

Once again, thank you for submitting your manuscript to the … and we look forward to receiving your revision.

Sincerely,
Editor-in-Chief

二、审稿

➢ 审稿意见(AE)

Comments to the Author:

Four reviewers' reports were collected on this manuscript, two major revisions and two minor revisions. All of them raised several technical issues which should be addressed during the next revision. Considering the recommendations of the reviewers as well as my own reading and analysis, the authors should prepare a full revision of this paper taking all the above comments into account.

二、审稿

➢ 审稿意见(Reviewers)

Reviewer: 1

Comments to the Author
In this paper, the authors hav
temporal Laplacian is added t
general, this paper is well writ
still some typos. I would like t
current version. For example,
Analysis for Video Semantic R
large-scale problems. (4) In th
Based on the comments abov

Reviewer: 2

Comments to the Author
This research work have propose
variables and the temporal Lapla
method of multipliers has been c
proposed design validity can be i
paper's organization needs to be
1) The design process of the proj
2) Please highlight the novelty ar
3) Abstract section can be suppo
4) At the end part of the abstract
5) Introduction section can be su
product quality, maintain operati
are helpful suggestions.
- Circular Polarized Antennas" fo
- Dual-Polarized Highly Folded B
21.09.2021.
- A Comprehensive Survey of "M
- A Comprehensive Survey on "V
193004, 2020.
6) Interesting equations and deri
them?
7) How the monitoring strategy v
8) Flowchart of the TE process is
this flowchart is extracted?
9) Monitoring performance for fa
10) To increase the validity of the
be listed in a table.
11) Conclusion is without any nu
12) Reference part can be improv

Reviewer: 3

Comments to the Author
The submitted manuscript, '
when the principal compone

The manuscript is well orgar
on it thanks to how the mar

I interpret that Principal Cor
neural network is also easy

In other fields, people use te
ones in the other fields:

Li, Sheng, Kang Li, and Yun I

ADMM is slow for many pro
mentioning:

Oktem, Figen S., et al. "High

In other domains, people us

Kavaklı, Koray, Hakan Urey,

For example, the above wor

In general, the captions in th
should tell what is FAR or TP
the function of Figure 3 in th

To my knowledge, this pape
authors address the concerr

Reviewer: 4

Comments to the Author
(There are no comments. Ple

提纲

一 投稿

二 审稿

三 回复

四 其他

三、回复

➢ 审稿意见

- 点对点
- 每一点都要在文章上有体现

三、回复

➢ 审稿意见

- 点对点
- 每一点都要在文章上有体现
- 不要嫌多，不要嫌简单，不要嫌重复
- 争取不要让审稿人再看文章，避免不必要的麻烦

三、回复

➢ 例子

Reply to the comments of reviewers on the manuscript

Title

We are very grateful for your careful reading and comments on our manuscript (ID: TCAS-II-12272-2021). We have carefully read reviewers' reports and revised the manuscript according to reviewers' suggestions. Changes are in blue in the manuscript for easy check. We have addressed all the comments in detail and hope the new version is satisfactory for possible publication in *IEEE Transactions on Circuits and Systems II: Express Briefs*.

三、回复

➢ 例子

‡ Comments by Associate Editor:

Question 1: Four reviewers' reports were collected on this manuscript, two major revisions and two minor revisions. All of them raised several technical issues which should be addressed during the next revision. Considering the recommendations of the reviewers as well as my own reading and analysis, the authors should prepare a full revision of this paper taking all the above comments into account.

Answer 1: Thank you for affirming the contribution of this manuscript and allowing a revision with an opportunity to address the reviewers' comments. In this new version, we have made the following main modifications:

- Revise the Abstract and Conclusion to highlight the novelty and contributions of this manuscript.
- Add some recent references in the Introduction to reflect the recent progress made by the research community.

三、回复

➢ 例子

♯ Comments by the First Reviewer:

Question 1: Although this paper is well written and easy to follow, there are still some typos. I would like to recommend the authors carefully proofread this paper and correct all the typos in the revision.

Answer 1: According to your suggestions, we have done our best to correct all the typos throughout the manuscript, and changes in the manuscript are indicated in blue for easy check. We hope you are satisfied with the revision.

Question 2: Some related feature dimension reduction methods are missing in the current version. For example, "Compound Rank-k Projections for Bilinear Analysis", "Adaptive Unsupervised Feature Selection With Structure Regularization" and "An Adaptive Semisupervised Feature Analysis for Video Semantic Recognition".

Answer 2: In this manuscript, we only consider PCA-related process monitoring methods, thus some feature dimension reduction methods are not referred here. In

三、回复

➢ 可能会遇到的问题

◘ 直接说没意义

♯ Comments by Third Reviewer:

Question: The topic of robust PCA/PLS has been beaten to death and is not something new - as the authors claim. A comprehensive review article in this regard is:

Robust partial least squares regression: Part I. algorithmic developments, Journal of Chemometrics 22(1) 1-13, 2008.

The works by Hubert and Rousseeuw as well as Stahel and Donoho produced early approaches/estimators for PCA models that are robust to outliers. In comparison, the submitted article does not review any of these works and does not add anything different to what existing body of work. Concerning to me is also that the reviewed literature was predominantly produced by authors of a specific geographic location, which is not a true reflection of the efforts made by the research community and professionally unacceptable.

三、回复

➢ 可能会遇到的问题

- 直接说没意义

三、回复

➢ 可能会遇到的问题

□ 这可能是幸运

Joint Sparsity Constrained Canonical Correlation Analysis with Application to Fault Detection *

Xianchao Xiu [a], Lili Pan [b], Ying Yang [a], Wanquan Liu [c]

[a] Department of Mechanics and Engineering Science, Peking University, Beijing 100871, China
[b] Department of Mathematics, Shandong University of Technology, Zibo 255049, China
[c] Department of Computing, Curtin University, Perth WA 6102, Australia

Abstract

Canonical correlation analysis (CCA) has attracted much attention due to its effectiveness in exploring the relationship between multi-view data. However, most of the variants of CCA ignore the similarity information belonging to the same group and can not automatically determine the number of canonical variables. To overcome these drawbacks, in this paper, a novel joint sparsity constrained canonical correlation analysis (JSCCA) model is proposed. Instead of considering $L_{2,1}$-norm regularization, $L_{2,0}$-norm joint sparse constraint is integrated into CCA. Technically, by taking advantage of the $L_{2,0}$-norm constrained optimization, JSCCA can improve the interpretability of canonical variables and accurately control the selected variables. In the proposed approach, an effective alternating minimization algorithm (AMA) using iterative hard thresholding and manifold constrained gradient descent is proposed. In theory, it is proved that any accumulation point of the sequence generated by AMA can converge to a stationary point with finite iterations. Finally, some experimental studies and comparative evaluations are conducted on an important application in engineering, i.e., fault detection, to illustrate the efficiency of the proposed method. To the best of our knowledge, this is the first work to integrate the $L_{2,0}$-norm joint sparse constraint into a CCA framework.

Key words: Canonical correlation analysis (CCA); $L_{2,0}$-norm; joint sparsity constrained canonical correlation analysis (JSCCA); alternating minimization algorithm (AMA); fault detection.

1 Introduction

Recent years have witnessed a growing interest in learning representations from multi-view data. For example, face images of a person in different poses and lighting conditions indicate the identity. Therefore, integrating all the multi-view data will contribute to a better understanding because each view provides different but complementary information (Miao, Yu, Ji and Zhou (2010); Bardsley, Serdobolskii and Suero-Taylor (2004); Sun (2013)). To improve the representation, different types of multi-view learning methods have been proposed. For instance, canonical correlation analysis (CCA), bilinear model (BLM), partial least square (PLS), and deep neural networks. Despite the aforementioned methods, CCA is still one of the most impressive methods, and it is extensively applied in the fields such as pattern analysis, machine learning, signal processing, biomedical science, and industrial electronics.

Even though CCA has the capability of conducting multi-view feature selection, it still has some limitations. In high-dimensional settings, such view may be redundant, which means that not all variables in the original space are identically informative for interpreting the canonical variables. In this case, if the learned canonical loadings are not potentially sparse or selective, it will be difficult to obtain a consistent common representation with promising discriminability, which inspired many researchers to propose different variants of CCA. Generally speaking, the extensions can be ascribed into three categories: discriminative CCA (Sun, Xie and Yang (2015)), Deep CCA (Andrew, Arora, Bilmes and Livescu (2013)), and sparse CCA (SCCA) (Xu, Zhu, Zhang, Zhao and Li (2020)). Compared with the first two categories, SCCA is frequently investigated

* This work was supported in part by the National Natural Science Foundation of China (Grant Nos. 61603301, 12000003, 11771235), and in part by the Young Innovation Teams of Shandong Province (Grant No. 2019L3003).

Email addresses: xiuxianchao@pku.edu.cn (Xianchao Xiu), panlili1107@163.com (Lili Pan), yyp@bjtu.edu.cn (Ying Yang), W.Liu@curtin.edu.au (Wanquan Liu).

Preprint submitted to Automatica 4 February 2021

Deep Canonical Correlation Analysis Using Sparsity Constrained Optimization for Nonlinear Process Monitoring

Abstract—This paper proposes an efficient nonlinear process monitoring method (DCCA-SCO) by integrating canonical correlation analysis (CCA), deep auto-encoder (AE) neural networks and sparsity constrained optimization (SCO). Specifically, a deep AE neural network is first embedded to learn a nonlinear function automatically, which characterizes intrinsic features of the original data. Then, the CCA is performed in that low-dimensional bottleneck representation space to extract the most correlated variables. In addition, the SCO is imposed on the procedure to reduce the redundancy of the hidden representation. Unlike other deep CCA methods, the DCCA-SCO provides a new nonlinear method that is able to learn a nonlinear mapping with a sparse prior. The validity of the proposed DCCA-SCO is extensively demonstrated on the benchmark Tennessee Eastman (TE) process and the diesel generator process. In particular, compared with CCA and DCCA, the fault detection rate is increased by 4.57% and 8.00% for the fault IDV(11).

Index Terms—Process monitoring (PM), canonical correlation analysis (CCA), auto-encoder (AE), sparsity constrained optimization (SCO).

I. INTRODUCTION

With the development of intelligent manufacturing, artificial intelligence and machine intelligence play a very important role in modern industry. Machine vision, as the application of machine intelligence in industrial engineering, is often used for automatic detection, process monitoring (PM), and robot guidance. It is no exaggeration to say that PM is crucial in satisfying the high requirements for product quality, efficiency maintenance, production costs, safety levels, and environmental protection. Compared with model-based PM, data-driven PM becomes more efficient due to the development of big data computing and modern sensing (see [1] and references therein). The most popular data-driven PM methods involve principal component analysis (PCA) [2], independent component analysis (ICA) [3], partial least squares (PLS) [4], and canonical correlation analysis (CCA) [5]. From the perspective of representation learning, CCA is different from other methods because it integrates inputs and outputs of the process data, which can provide an effective way to explore the relationship among process variables and to allow for better monitoring. Therefore, CCA-based PM has attracted increasing attention in the research community [6]-[9].

In fact, CCA can be traced back to Hotelling [10], who aims to seek a pair of canonical matrices such that the projected variables have maximum correlations [11]. Recently, Yang et al. [12] makes a comprehensive review about CCA and its various modifications, extensions, and generalizations. Even though CCA is widely used in medical science and computer vision, the applications to PM have not been considered sufficiently. Chen et al. [5] was the first to develop a CCA-based PM to both static and dynamic processes, and verified the effectiveness by using an ethanol evaporation process. The basic idea is to consider two sets of process variables, generate a residual based on canonical correlations, construct a test statistical metric, and build a detection logic to determine whether a fault occurs. Since then, CCA-based PM has been well recognized. In [6], the CCA was incorporated with a statistical local technique to detect incipient multiplicative faults. In [7], the distributed CCA for plant-wide processes was designed by describing the correlation between different operation units. In [8], the multimode PM was addressed, which extended CCA-based PM to deal with complex cases. In addition, quality-relevant monitoring was considered in [9] and the performance was also evaluated using the Tennessee Eastman (TE) process.

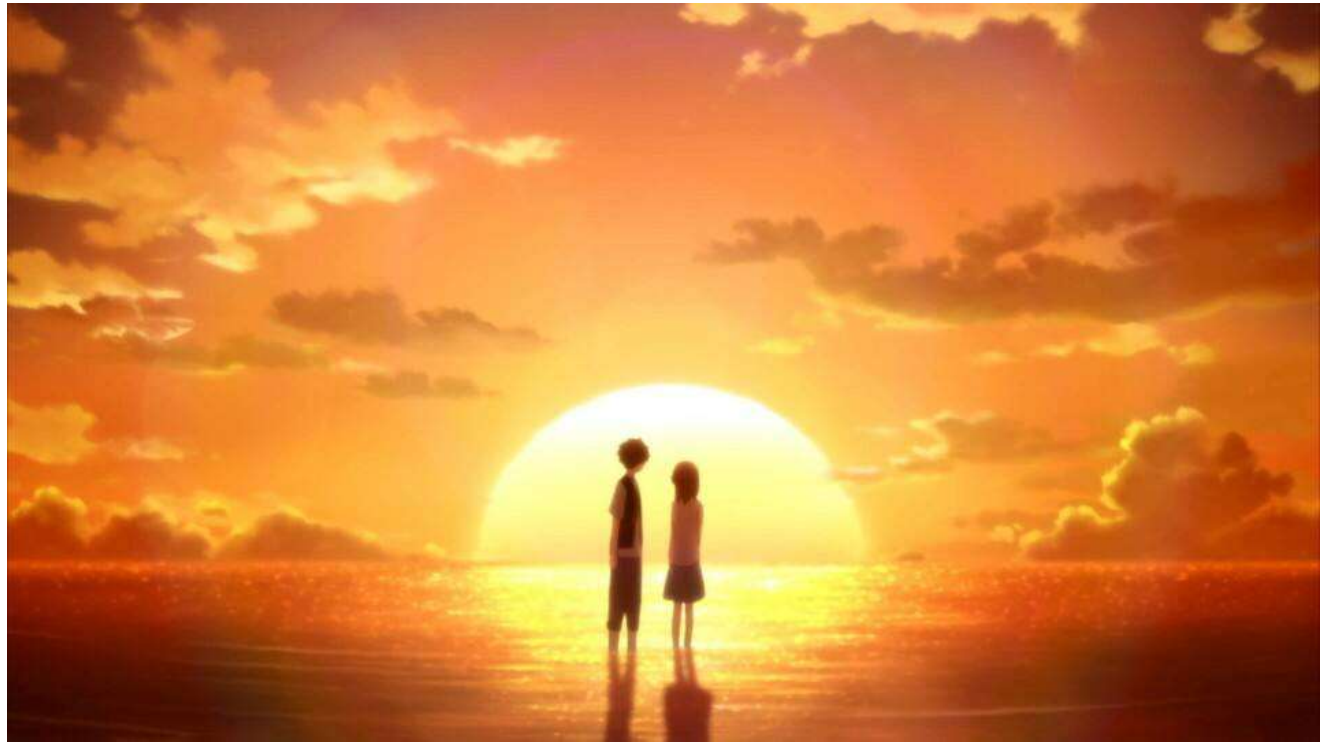
Although CCA has achieved great success in PM, there are still some shortcomings. The first shortcoming of the classical CCA is that it cannot model nonlinear process data. It is accepted that modern industrial processes are usually complicated, which makes CCA-based PM perform poorly owing to its assumption that the relationship among latent process variables is linear. To alleviate this issue, Lin et al. [13] proposed kernel CCA (KCCA) to extract the canonical correlations. The key feature is to use a kernel function to project the original nonlinear process data into a higher dimensional space, in which the projected data can be separated by linear classifiers [14]. In comparison with CCA, the KCCA is able to capture the nonlinear relationship among process variables. Even though KCCA can learn a nonlinear representation, it has an obvious disadvantage, that is, the kernel function needs to be carefully chosen before monitoring. More importantly, it takes a long time to calculate KCCA, which brings a burden to these kernel-based PM methods. Thanks to the development of deep neural networks, the nonlinear function can be automatically learned from the given data. Accordingly, Andrew et al. [15] constructed a deep CCA (DCCA) framework by embedding two conventional neural networks. It was shown that DCCA can learn a better representation with higher correlations than those learned by the existing CCA and KCCA. Later, Wang et al. [16] introduced deep auto-encoder (AE) neural networks for CCA, in which the learned features were forced to accurately reconstruct the inputs. A similar idea has been successfully used in PM, such as deep coupling AE [17] and deep nonnegative matrix factorization with AE [18]. Very recently, by incorporating deep belief neural networks and CCA, Jiang et al. [19] proposed a DCCA monitoring scheme for nonlinear PM and then extended it to nonlinear batch

http://www.ieee-ies.org/

做一个合格的审稿人!

三、回复

- If Accepted!



那美过天空，包括一切美的事物到底是什么！

提纲

一 投稿

二 审稿

三 回复

四 其他

四、其他

The Most Common Habits from more than 200 English Papers written by Graduate Chinese Engineering Students

By Felicia Brittman

This paper presents some of the most common Chinese-English habits observed from over two hundred English technical papers by Chinese writers. The habits are explained and in most cases, example text from an actual paper is given along with preferred text. An attempt is made to explain how to correct and prevent such mistakes. In some cases a possible explanation of why the habit occurs is also given. This paper can serve as an individual guide to editing technical papers especially when a native English-speaking editor is unavailable.

四、其他

➢ 缺少a/an/the

- Incorrect：Figure 2 shows the distribution of relative velocity on surface of main and splitter blades.
- Correct：Figure 2 shows the distribution of relative velocity on the surface of the main and splitter blades.

四、其他

➢ 避免使用长句

- Very long sentences are especially common in Chinese-English writing because the writers often translate directly from Chinese to English. Although, in Chinese writing it is acceptable to put several supporting ideas in on sentence to show their relationship, in English, the main idea and each supporting idea is typically written in separate sentences.

四、其他

➢ 避免使用长句

- Too long: The gear transmission is grade seven, the gear gap is 0.00012 radians, the gear gap has different output values corresponding to any given input value, nonlinearity of the gear gap model can be described by using the phase function method, the existing backlash block in the non-linear library of the Matlab/zdimulink toolbox can be used, the initial value of gear gap in the backlash block is set to zero.
- Correct: The gear transmission is grade seven. The gear gap, which is 0.00012 radians, has different output values corresponding to any given input value. The nonlinearity of the gear gap model can be described by using the phase function method. The existing backlash block in the non-linear library of the Matlab/zdimulink toolbox can be used; the initial value of gear gap in the backlash block is set to zero.

四、其他

➢ 勿用目的开头

- Incorrect: For the application in automobile interiors, this paper studies the nesting optimization problem in leather manufacturing.
- Correct: This paper studies the nesting optimization problem in leather manufacturing for application in automobile interiors.

四、其他

➢ 勿用目的开头

- Incorrect: To ensure sheet metal quality as well as assembly quality, CMMs are widely used in automotive industry production.
- Correct: CMMs are widely used in automotive industry production to ensure sheet metal quality as well as assembly quality.

四、其他

➢ 正确使用数字和符号

- Incorrect：12 parameters were selected for the experiment.
- Correct：Twelve parameters were selected for the experiment.

四、其他

➢ 正确使用数字和符号

- Incorrect: If the power battery SOC > SOClo and the driving torque belongs to the middle load,…
- Correct: If the power battery SOC is greater than SOClo and the driving torque belongs to the middle load,…

四、其他

➢ 格式要统一

- Incorrect： Figure.6, Figure6, Fig.6, Tbl10
- Correct： Figure 6, Fig. 6, Tbl. 10

四、其他

- 不要重复

Instead of	Say	Or say
Research work	Research	Work
Limit condition	Limit	condition
Knowledge memory	Knowledge	Memory
Sketch map	Sketch	map
Layout scheme	Layout	scheme
Arrangement plan	Arrangement	plan
Output performance	Output	performance
Simulation results	results	simulation
Knowledge information	Knowledge	information
Calculation results	results	calculation
Application results	Results	Application

四、其他

➢ 更多

- Do not write ‘by this way’. Instead write ‘by doing this’, or ‘using this method’.
- Never write ‘How to…’ at the beginning of a sentence. (Don’t say it ither.)
- Do not write ‘the results are showed as Figure 2’. Do write ‘the results are shown in Figure 2’.
- Refrain from using the word obviously in a technical paper
- Avoid overusing the phrases ‘that is to say’ and ‘namely’. Instead, try to convey your meaning in one sentence.

学术英语写作

Scientific Writing

第五章 语法

提纲

一 词类

二 插入语、否定、时态、语态

三 动词非谓语形式

四 从句

一、词类：冠词

➢ 一般应加冠词的情况

- 在单数可数名词前一般要有冠词，泛指时多用不定冠词

  用a还是an，取决于不定冠词后紧跟的第一个音素(而不是第一个字母)

  - ✓ This is an n-valued function.
  - ✓ A magnet has an S pole and an N pole.
  - ✓ Sudden changes of voltage in an RLC circuit may produce ringing.
  - ✓ This is an 8-volt battery.
  - ✓ A UFO appeared in the sky last night.

一、词类：冠词

➢ 一般应加冠词的情况

- 对前面已提到过的东西、心目中特指的东西、带有后置修饰语(短语或从句)的特指的东西前一般应使用定冠词

✓ The control of system is an interdisciplinary subject.

✓ In Chap.1 the analysis of diode was discussed in terms of three general methods.

✓ The design of control systems depends greatly on the application of complex-variable theory.

✓ The reader should be aware that the binary data code is converted to base 10 for human consumption.

一、词类：冠词

➢ 一般不加冠词的情况

- 泛指的物质名词或不可数名词

  - ✓ Electricity is widely used in industry and agriculture.
  - ✓ Electrical energy can be changed by electric motors into mechanical energy.
  - ✓ Machines are run by electricity.

一、词类：冠词

➢ 一般不加冠词的情况

- 论文的标题、书籍名称等的冠词可以省略

  - ✓ Introduction to computers.
  - ✓ Study of phase-locked loops.
  - ✓ Quantum theory of light.
  - ✓ Component Method of Vector Addition.

一、词类：冠词

➢ 一般不加冠词的情况

- 专有名词一般不加冠词

  - ✓ Einstein
  - ✓ Harbin Engineering University

注意：由三个或三个以上的普通单词构成的单位或国家名称前要加定冠词

- ✓ The Department of Computer Science
- ✓ the People’s Republic of China

一、词类：冠词

➢ 一般不加冠词的情况

- 图题中一般可以省去冠词

✓ Figure 2-1 Generation of sine wave by vertical component of rotating vector.

✓ Figure 2-5 Effect of ammeter resistance on current in circuit.

✓ Fig. 1.1 Keyboard with attached printer and oscilloscope display.

英美人习惯在图示说明后用句号，不论它是否是一个句子!

一、词类：冠词

➢ 一般不加冠词的情况

- 某些可数名词单数形式在泛指时可省去冠词

（特别是在between A and B, from A to B, the variation of A with B 等表达式中）

- ✓ Ohm first discovered the relationship between current, voltage, and resistance.
- ✓ A transistor consists of three parts: emitter, base, and collector.

一、词类：冠词

➢ 一般不加冠词的情况

- 表示独一无二的人之前不用冠词

✓ The unit of power is a joule per second, which is called a watt, in honor of James Watt, developer of the stream engine.

一、词类：冠词

➢ 一般不加冠词的情况

- 在人名的所有格之前不用冠词

  ✓ This equation is known as Ohm’ s law.

!!!人名直接修饰普通名词时，一般在它之前要用定冠词

✓ This equationcan also be obtained from the Karnaugh map shown in Fig.1-3.

✓ The Chebyshev window is more difficult to implement than Hanning’ s window.

一、词类：冠词

➢ 一般不加冠词的情况

- 方程、表达式、公式、图表、章节、页码等后

✓ 方程（2-1）	Equation (2-1)
✓ 第三章	Chapter 3
✓ 5.1节	Section 5.1
✓ 表2-2	Table 2-2
✓ 图3.2	Fig. 3.2
✓ 第5页	Page 5

一、词类：冠词

➢ 特殊情况

- 在表示某个参数的单位的词前往往用定冠词

  - ✓ The unit of potential difference is the volt.
  - ✓ The unit of capacitance is the farad.

一、词类：冠词

➢ 特殊情况

- 几个名词并列时可以共用第一个名词前的冠词

  - ✓ This book is designed for managers who wish to learn about the technology, applications, and scope of CAD/CAM.
  - ✓ Microwave engineering is the branch of electrical engineering that deals with the transmission, control, detection, and generation of radio waves whose wavelength is short compared to the physical dimensions of the system.

一、词类：冠词

➢ 特殊情况

- 当表示“比较一下”、“计算一下”、“了解一下”、“考察一下”、“作一描述”等等时，在抽象名词前一般使用不定冠词

  - ✓ A brief qualitative discussion of some basic concepts is presented in this paper.
  - ✓ A quantitative analysis of this circuit is rather involved.
  - ✓ A general knowledge of the characteristics of electrical transmission is essential if the reader is to gain an understanding of data communications.
  - ✓ There is a growing awareness that this technique is of value.

一、词类：冠词

➢ 特殊位置

- 定冠词的特殊位置 all/both + the + 复数名词

  - ✓ All the instruments in our laboratory are home-made.
  - ✓ Both the devices here are very good in quality.

一、词类：冠词

➢ 特殊位置

- 不定冠词的特殊位置 too/so/as/how + 形容词 + a/an + 单数名词

  - ✓ It is necessary to determine how large a force is required to move this body.
  - ✓ This manipulator can lift as heavy a weight as 450 kilograms.

一、词类：冠词

➢ 挑错题

- UASMA 协议采用了独特的帧结构

  UASMA protocol employs an unique frame structure.

- 最后，用这种方法设计了宽带阶梯阻抗变换器。

  At last, broad stepped impedance transformer is designed by this method.

- 该方法适用于任意形状的一维势垒。

  The approach can be applied to one-dimensional potential barrier with arbitrary profile.

- 我们提出了一种基于牛顿迭代法的数值方法。

  We propose a kind of numerical method based on the Newton’ s iterative method.

一、词类：数词

➢ 分数表示法

- 一般方式：分子(基数词)/分母(序数词复数形式，分子不大于1时用单数)

  - ✓ three fifths/seven tenths/ one half

一、词类：数词

➢ 分数表示法

- 科技界经常使用的两种分数表示法(“千分之…”、“万分之…”)

  - ✓ 3 parts per thousand
  - ✓ a third part in a thousand

一、词类：数词

➢ 在句子中作前置修饰语

- 倍数/分数 + the/that/what + …

✓ This voltage is 80 times the signal applied to the amplifier.

✓ Its speed is three tenths that of light.

✓ The voltage across this resistor is three fifths what it was.

一、词类：数词

➢ 表示倍数增长

- n times+比较级=n times as +原级+as

  - ✓ This wire is six times longer than that one.
  - ✓ This value is nearly 4.5 times greater than the ideal one.

一、词类

➢ 课后题

- 其误差(error)为千亿分之六。
- 这台计算机所存储的信息比那台多3倍。
- 不久的将来对这种设备的需求量(demand) 为现在的20倍。
- 这个元件(component)上的电压为零点几伏特(volt).
- 现在其内部的压力被减少了15倍。

一、词类：介词

【1】of

- “of+某些抽象名词”等效于这些名词相应的形容词，但语气更强。

  - ✓ Engineers may find the book of value as a reference on basic problems.
  - ✓ What is described in this section is of great importance.

一、词类：介词

【1】of

- 可表示“在……之中”，既可用作最高级 的比较范围，也可用在一般的句子中。

  - ✓ Of all the computers in this laboratory, this one works best.
  - ✓ Of all the four parameters, three can be disposed of rather quickly.

一、词类：介词

【1】of

- 可表示其前后两者处于同位关系

✓ The lighter machine part has a mass of 7 kg.

✓ This device can supply 4 mA of output drive current.

✓ The topic of trouble-shooting will be discussed in Chapter 9.

一、词类：介词

【1】of

- 其后面的名词是其前面的名词的逻辑主语

  - ✓ Fig.2 shows the variation of V with I.
  - ✓ Ellipses are used to describe the motions of the planets around the sun.

一、词类：介词

【1】of

- 其后面的名词是其前面的名词的逻辑宾语

✓ The resolution of a force into x- and y- components is possible.

✓ Exposure of the body to potentially toxic substances should be avoided.

一、词类：介词

【2】with

- “with+某些抽象名词”等效于这些名词所对应的副词，但语气更强。

  - ✓ These experiments should be done with care.
  - ✓ This parameter can be measured with accuracy.

一、词类：介词

【2】with

- With与vary, change, increase, decrease等动词连用时可表示“随着……”之意。

  - ✓ The conductivity of a semiconductor varies with temperature.
  - ✓ The current decreases with the increase in resistance.

一、词类：介词

【2】with

- 可构成一种“with结构”，其应用特别广泛，主要作状语和后置定语

✓ With friction present, a part of power has been lost as heat.

一、词类：介词

【2】with

- 将with 用在句首可表示“对于，有了”等意思

  - ✓ With the alternating current, things are different.
  - ✓ With radar, we can see distant objects.

一、词类：介词

【3】by

- by可表示增加、减少、相差的数值

✓ In this case v and i differ in phase by 90°.

一、词类：介词

【3】by

- by可表示“根据，按照”，主要用在推导之中

  - ✓ By Eq.(3), we can obtain the following expression.

一、词类：介词

【3】by

- “by+动名词”一般可表示“通过……”之意

  - ✓ By an examination of the performance of the device, we can understand its features.
  - ✓ By analyzing this model, one can learn about the structure of an atom.

一、词类：介词

【3】by

- 表示方法的method, technique, approach, scheme等前通常用by，意为“用…方法”

  - ✓ We can solve that differential equation by this method.

一、词类：介词

【3】by

- 表示尺寸“长、宽、高”之间的相乘

  - ✓ This device measures 12 by 18 by 6 inches.

一、词类：介词

【4】for

- for 可表示时间或距离的长短

  - ✓ The output may stay high for a long time.
  - ✓ They have been working for several years on such a computer.

一、词类：介词

【4】for

- for 可表示“对于，当……时候，如果…… 的话”

  - ✓ For x>1, this equation does not hold.
  - ✓ This book is too difficult for a beginner.

一、词类：介词

【4】for

- for 与动词solve连用表示方程所要求解的对象

  - ✓ It is necessary for us to solve this equation for x.

一、词类：介词

【4】for

- 在method, technique, equation, algorithm, condition, requirement等词后多用for

  - ✓ There are several methods for antenna design.
  - ✓ This paper presents an algorithm for describing the solution of some engineering problems in the graph theory.

一、词类：介词

【5】on/upon

- 在on和upon之后跟有动名词或表示动作的名词时，一般表示“一……就”和“在……之后”之意

  - ✓ On simplifying, the result becomes as follows.
  - ✓ Upon rearranging the above equations, we get to the following set of equations.
  - ✓ On the second half cycle, Q1 is off while Q2 is on.

一、词类：介词

【6】in

- in后跟表示单位的名词复数时，意为“用”

✓ Here t is measured in seconds.

一、词类：介词

【6】in

- in后跟表示方向的词时，意为“朝”

✓ Radio waves travel in all directions.

一、词类：介词

【6】in

- in可表示“方面”

  - ✓ This computer is good in quality.
  - ✓ The output pulse is identical in form and width to that of the input.

一、词类：介词

【6】in

- in后跟动名词或表示动作的名词时，意为“在……时 候”、“在……过程中”

  - ✓ In our discussion of differential equations, we shall restrict our attention to equations of the first degree.

一、词类：介词

【6】in

- 在名词 reduction, decrease, increase, change, drop, rise, fall 等后多用in

  - ✓ We can measure the slight change in pressure.
  - ✓ The inclusion of R causes a decrease in amplification.

一、词类：介词

【7】over

- 表示“通过、越过”

✓ It is necessary to protect data that are transferred over the network.

一、词类：介词

【7】over

- 表示“与…相比”

  - ✓ The scheme has a few advantages over that one.

一、词类：介词

【7】over

- 表示“在…范围内”

  - ✓ This voltage is fairly stable over a wide frequency range.

一、词类：介词

【7】over

- 表示“超过(=more than)”

  - ✓ The wavelength of this musical note is 7.8 ft, over three times longer than the wavelength of the same note in air (2.5 ft).

一、词类：介词

【7】over

- 表示“遍及”

✓ The charge is distributed over the surface of the conductor.

一、词类：介词

➢ 练习题

- 本文提出了雷达目标的一种新的识别方法。
- 目标的运动状态对EKF跟踪精度的影响是非常大的。
- 在10月8日早上又发射了一颗通信卫星。
- 电压是用伏特度量的。
- 他们将赴北京参加移动通信国际会议。

一、词类：介词

➢ 练习题

- 本文提出了雷达目标的一种新的识别方法。

  This paper presents a new kind of recognition method of radar target.

- 目标的运动状态对EKF跟踪精度的影响是非常大的。

  The influence of the moving state of the target is very strong for the tracking accuracy of the EKF.

- 在10月8日早上又发射了一颗通信卫星。

  Another comsat has been launched in the morning of the 8th of October.

- 电压是用伏特度量的。

  Voltage is measured with volt.

- 他们将赴北京参加移动通信国际会议。

  They will leave to Beijing to attend an international conference of mobile communication.

一、词类：动词

➢ 特殊连系动词的使用

- 指由少数实义动词后跟形容词变成的连系动词，常见的有get, turn, go, stay, appear, look, prove等

  - ✓ This graph looks puzzling.
  - ✓ Its result proves correct.
  - ✓ In this case, the output stays high.

一、词类：动词

➢ 半助动词的使用

- 半助动词(remain, seem, appear, happen)与动词不定式合成谓语

  - ✓ This problem remains to be solved.
  - ✓ These experiments appear to indicate that there are only two kinds of electric charges in the universe.

一、词类：动词

➢ 代动词(do, does)的使用

- 科技写作中，代动词主要出现在比较状语从句和方式状语从句中

  - ✓ Copper conducts electric current better than aluminum does.
  - ✓ These radio waves behave as light waves do.
  - ✓ As do most operating systems, the UNIX operating system consists of two separate parts: the kernel and the systems program.

一、词类：动词

➢ 考察题

- This kind of magnets [ ] widely used in electric bells.
- There [ ] a large number of short CPU bursts.
- This is particularly true when more than one transistor [ ] used in a circuit.
- Each man and woman [ ] asked to complete a form.
- In this case, large amounts of code [ ] needed to handle infrequently occurring cases.
- The signal plus noise passes through the receiving filter and [ ] sampled by the A/D converter.

一、词类：动词

➢ 考察题

- This kind of magnets is widely used in electric bells.
- There is a large number of short CPU bursts.
- This is particularly true when more than one transistor is used in a circuit.
- Each man and woman was asked to complete a form.
- In this case, large amounts of code are needed to handle infrequently occurring cases.
- The signal plus noise passes through the receiving filter and is sampled by the A/D converter.

一、词类：副词

➢ 几类副词作后置定语的情况

- 地点副词 above, below, here, there, everywhere, anywhere, between, around, nearby, up, down作后置定语

  - ✓ The table below lists resistivities of some substances.

一、词类：副词

➢ 几类副词作后置定语的情况

- 时间副词now, then, today, ahead, afterward作后置定语

  - ✓ The problem now is to determine the magnitude of the current.

一、词类：副词

➢ 几类副词作后置定语的情况

- 数量状语+某些副词(away, apart, on, ago等)作后置定语

  - ✓ The scientists 50 years ago could not do that.
  - ✓ The force between two charges of 1 coul each a distance of 1m apart is 9×10 N.

一、词类：副词

➢ 副词作状语时的位置

- 有些副词可放在句首

  ✓ Usually some of these parameters are known.

一、词类：副词

➢ 副词作状语时的位置

- 不及物动词与介词连用的情况下，副词往往放在介词与动词之间

✓ The device consists mainly of five parts.

✓ This leads directly to the circuit of Fig. 6.

一、词类：副词

➢ 副词作状语时的位置

- 在“形容词+介词”(due to)的情况下副词往往插在其中

  - ✓ This variation of ICQ with temperature is due primarily to variations in VBE.

一、词类：副词

➢ 副词作状语时的位置

- 有情态动词时，修饰情态动词的副词放在其后；修饰动作的动词可放在过去分词前，也可放在过去分词后

  - ✓ This parameter can also be obtained from the vi characteristic.
  - ✓ The reverse voltage gain can usually be neglected.
  - ✓ The noise voltage can be greatly attenuated.
  - ✓ The ac and dc components can be treated separately.

一、词类：副词

➢ 副词作状语时的位置

◻ 副词放在主动语态主动词前

- ✓ We now introduce the usual symbols used in electric-circuit diagrams.
- ✓ This figure clearly shows the test points.

一、词类：副词

➢ 副词作状语时的位置

□ 副词放在宾语之后的情况

- ✓ You must use these rules correctly.
- ✓ We can solve the equations simultaneously.

一、词类：副词

➢ 副词作状语时的位置

- 修饰不定式的副词一般可放在to 之后，也可放在动词或短语后，有时还可放在to之前

  - ✓ It is necessary to decrease propagation delay time dramatically.
  - ✓ We discuss the inverter primarily to illustrate the important characteristics common to all families of gates.

一、词类：形容词

- 必须后置的形容词主要有present(存在的)，else(其它的)，what(so)ever(任何的)，involved(有关的)，inclusive(首尾包括在内的)

  - ✓ This charge interacts with other charges present.
  - ✓ Everything else in this equation can be measured except C2.

一、词类：形容词

- 有些以“-able”或“-ible”结尾的形容词常放在被修饰的名词后以加强语气，如available, obtainable, achievable, responsible, possible, usable, total等

  - ✓ Even in this case, here are two directions possible.
  - ✓ This measure is the key for the extremely low dc power achievable.

一、词类：形容词

- 形容词只能放在由some, every, any, no与thing, body, one排列组合成的不定代词之后

  - ✓ Now there is nothing mysterious about computers.
  - ✓ This book contains something new.
  - ✓ Everything electronic will be done digitally.

一、词类：形容词

- 两个形容词作定语的情况

  - ✓ This book is a help to circuit designers both new and old.
  - ✓ There are many problems, both technological and financial, that remain to be solved.
  - ✓ Neutron has no charge, neither positive nor negative.

一、词类：形容词

- “副词或数量状语+某些形容词”常用作后置定语

  - ✓ The efficiency of the amplifier would be 50 percent, the maximum theoretically possible.
  - ✓ Fig.16-3 shows a situation a bit more complex.
  - ✓ For any value of x there are positive and negative slopes, numerically equal.

一、词类：形容词

- 单个形容词(多数为un~ed形式)作方式状语

  - ✓ With the help of a computer, this machine can work unattended.
  - ✓ Even if a student can follow every line of every example in this book, that doesn’t mean that he or she can solve problems unaided.

一、词类：形容词

- 形容词短语作状语

  - ✓ Accurate in operation and high in speed, computers can save man a lot of time and labor.
  - ✓ Dependent upon the system, this delay can be 1s to 2 min long.
  - ✓ I5 is zero, independent of the applied voltage.

一、词类：形容词

➢ 练习题

- 在这种情况下，输入并不下降，输出也不下降。
- 导体的电阻不仅取决于制成导体的材料，而且取决于导体的尺寸和温度。
- 这个参数几乎不能测出来。
- 在这个实验室，这台仪器比其他任何一台都贵。

一、词类：形容词

➢ 练习题

- 在这种情况下，输入并不下降，输出也不下降。

  In this case, the input does not fall; the output does not fall, too.

- 导体的电阻不仅取决于制成导体的材料，而且取决于导体的尺寸和温度。

  The resistance of a conductor not only depends on the material with which the conductor is made, but also on the size and temperature of the conductor.

- 这个参数几乎不能测出来。

  This parameter almost cannot be measured.

- 在这个实验室，这台仪器比其他任何一台都贵。

  In this laboratory, this instrument is more expensive than any one.

一、词类：代词

- 物主代词作定语时所表示的主谓关系和动宾关系

  - ✓ Physics is the most quantitative of the sciences, and we must become accustomed to its insistence upon accurate measurements and precise relationships if we are to appreciate its results. (主谓关系)
  - ✓ The questions of convergence are not simple, and their study forms an important chapter in modern analysis. (动宾关系)

一、词类：代词

- 代词one的一个特殊用法，表示“有人，人们，大家”

  - ✓ By the “most efficient” algorithm one normally means the fastest.
  - ✓ Before one studies a system, it is necessary to define and discuss some important terms.

一、词类：代词

- 用it, its, they, their等代词来代替后面主句中的人或物

  - ✓ Before it can work, a computer must be told what to do .
  - ✓ Because of its capacity to handle large volumes of data in a very short times, a computer may be the only means of resolving problems when time is limited.
  - ✓ When they get hot, all metals melt.

一、词类：名词

- 用不带冠词的单个名词作方式状语或方面状语

  - ✓ This device can be computer controlled.
  - ✓ The container is water resistant.

一、词类：名词

- 名词短语用作同位语的情况

  - ✓ When we use this multiplication method it is not necessary to figure out all possibilities, a procedure which is often very lengthy, or even impossible from a practical point of view.
  - ✓ An instrument for measuring electric resistance, the ohmmeter is widely used in electrical engineering.

一、词类：名词

- 名词与介词的搭配(名词 of 名词A介词名词B)

  - ✓ This chapter deals with the effect of temperature on transistors.
  - ✓ The dependence of y upon x is expressed by y=f(x).
  - ✓ The resolution of a force into x- and y- components is possible.

一、词类：名词

➢ 几种特殊的名词复数形式

□ 一些缩略词的复数形式

- ✓ This section deals with analog-to-digital converters （A/D’ s).
- ✓ These systems include PCs running Microsoft Windows.
- ✓ These two emf’ s are equal.

一、词类：名词

➢ 几种特殊的名词复数形式

◻ 某个字母、参数及数字的复数形式

- ✓ The computer can interpret the same binary configuration of 0’s and 1’s as data or as an instruction.
- ✓ The difference in y’s is taken so that it is positive.

一、词类：名词

➢ 几种特殊的名词复数形式

- 当数字小于1时，其修饰的名词却用复数形式

  - ✓ The amplitude varies 0.44 units above and below the zero axis.
  - ✓ In this case both the resistor and the source absorb 0 watts.

一、词类：名词

➢ 几种特殊的名词复数形式

- 缩略词的复数形式应放在缩略点之前

  - ✓ Figs. (1-2) and (1-3) show this process.
  - ✓ Eqs. (2-5) and (2-6) are very useful.

一、词类：名词

➢ 几种特殊的名词复数形式

- 一些不可数名词(time, work, energy等)在特定情况下也可以用复数形式

  - ✓ The control signal can arrive at different times without affecting the state of the output.

一、词类：词汇搭配

➢ 某些名词前搭配特定的动词

- ✓ 提高质量
- ✓ 提高效率
- ✓ 提高能力
- ✓ 取得进展
- ✓ 取得胜利
- ✓ 取得成就
- ✓ 取得经验
- ✓ 取得效果

一、词类：词汇搭配

➢ 某些名词前搭配特定的动词

- ✓ 提高质量 Improve the quality
- ✓ 提高效率 Raise the efficiency
- ✓ 提高能力 Increase the ability
- ✓ 取得进展 Make progress
- ✓ 取得胜利 Win a victory
- ✓ 取得成就 Make achievements
- ✓ 取得经验 Gain experience
- ✓ 取得效果 Achieve results

一、词类：词汇搭配

➢ 动词后跟特定的介词

- ✓ 把A扔向B
- ✓ 把A瞄准B
- ✓ 把A发向B
- ✓ 把A指向B
- ✓ 把A射向B

一、词类：词汇搭配

➢ 动词后跟特定的介词

- ✓ 把A扔向B　　Throw A at B
- ✓ 把A瞄准B　　Aim A at B
- ✓ 把A发向B　　Send A at B
- ✓ 把A指向B　　Point A at B
- ✓ 把A射向B　　Emit A at B

一、词类：词汇搭配

➢ 形容词后跟特定的介词

- ✓ Characteristic of
- ✓ Indicative of
- ✓ Aware of
- ✓ Familiar to
- ✓ Familiar with
- ✓ The same as
- ✓ Equivalent to
- ✓ Parallel to
- ✓ Similar to
- ✓ Proportional to
- ✓ Tangent to
- ✓ Vertical to

一、词类：词汇搭配

➢ 练习题

- 他们都不会解这类特殊的微分方程。
- 他们不知道这材料能否承受这么大的力。
- 共有M个多边形，其每个顶点数均为N。
- 铁的导电性能几乎与铝一样好。

一、词类：词汇搭配

➢ 练习题

- 他们都不会解这类特殊的微分方程。

  All of them can not solve this type of special differential equation.

- 他们不知道这材料能否承受这么大的力。

  They do not know if this material can stand a so large force or not.

- 共有M个多边形，其每个顶点数均为N。

  There are M polygons altogether, whose vertex number is all N.

- 铁的导电性能几乎与铝一样好。

  The iron is almost as good conductor as the aluminum.

提纲

一 词类

二 插入语、否定、时态、语态

三 动词非谓语形式

四 从句

二、插入词

➢ 副词、介词短语作插入语时的位置

- 类似于副词作状语时在句中的位置，在句首、句尾，也可插在句中，如however, for example

  - ✓ However, the following factors must be taken into account.
  - ✓ Digital information, however, consists of discrete numerical values.
  - ✓ The ripple is very much reduced by the double filtering action, however.

二、插入词

➢ 具有主谓结构的插入语

- 处于主句中的情况，一般处于主语或连系动词之后，由逗号分开。

  - ✓ This book is, we hope, a concise introduction to communications systems.
  - ✓ The Special Revision Units will, it is hoped, constitute a valuable aid in the task of consolidation.

二、插入词

➢ 具有主谓结构的插入语

- 处于定语从句中的情况，一般跟在从句主语后，有时由逗号分开，一般没有逗号分开。

  - ✓ Ohm’s law has a few forms which it will be found are very useful.
  - ✓ In this case Ic varies little with UCE, which we think is very important.

二、插入词

➢ 具有主谓结构的插入语

- 采用祈使句形式出现在句中，最常见的是 say，let us say等

  - ✓ Well-grounded students can absorb Chapters 4 and 5 in say three weeks.
  - ✓ The pump creates pressure of, let us say, forty pounds per square inch.
  - ✓ We try to make x drop below say 5.

二、否定

➢ 否定

- 一定要使用no, none, neither等表示全否定

  - ✓ None of these problems can be solved at once.
  - ✓ No book is perfect.
  - ✓ Neither of the devices is good in quality.

二、否定

- 使用every, both, all等与not连用来表示部分否定而不能表示全否定

  - ✓ Students are not familiar with all these problems.

二、否定

- 否定的转移：主句的否定，其实际含义转移到了从句中

  - ✓ It does not appear that this value satisfies the equation.
  - ✓ It did not seem that such studies could have any practical use.

二、时态

➢ 时态

- 在有“by+时间”的句中应该使用完成时态

  - ✓ By the time students graduate, they will have taken up 30 courses in all.
  - ✓ By 1980 the corporation had produced more than 1000 radars.

二、时态

- 用现在完成进行时来强调“一直在进行某项工作”的含义

  - ✓ These days he has been conducting an important test, but he has not finished it yet.

二、时态

- 句中有具体的过去时间时只能由一般过去式，而不能用过去完成时

  - ✓ In the 1940’s, they designed the first generation of electronic computers.

二、语态

- 没有被动语态的几种情况

  - ✓ When will the international conference on mobile communication take place this year?
  - ✓ This device consists of five parts.
  - ✓ Computers have found wide applications in every field.

二、时态

- 论文摘要中，表示“本文论述[介绍、讨论、提出]…”时应用一般现在时

  - ✓ A new multiple description video coding system is proposed in this paper.
  - ✓ This paper presents a new method.
  - ✓ This paper deals with the features of signals.

二、时态

- 在科技文中表示“人们……”时一般应使用被动语态句或用one作主语的主动句

  - ✓ As early as the 1820’s it had been realized that this metal could be used in industry.
  - ✓ If one wishes to send out radio waves, it is necessary to generate high-frequency oscillations.

二、时态

- “不及物动词+介词=及物动词”的被动语态形式

  - ✓ Actually, this result could have been arrived at intuitively.
  - ✓ In this case, the work done is accounted for by an increase in potential energy.

二、时态

- “及物动词+名词+介词=及物动词”的被动语态形式

  - ✓ No mention has been made of this phenomenon in the book.
  - ✓ This point must be paid full attention to.

二、时态

- 由“get, become, remain等+过去分词”构成的被动句

  - ✓ If the flow is fast enough, the heat gets carried away by convection.
  - ✓ The gate will remain closed by the low input until the clock pulse arrives.

二、时态

➢ 练习题

- 我们容易确定该物体的重量。
- 我们发现这个概念很难解释。
- 功等于力乘以距离。
- 所得结果与实验数值吻合。
- 这些窗户均承受不了这么大的力。

二、时态

➢ 练习题

- 我们容易确定该物体的重量。

  We are easy to determine the weight of the body.

- 我们发现这个概念很难解释。

  We find this concept very difficult to be explained.

- 功等于力乘以距离。

  Work equals to force multiplying distance.

- 所得结果与实验数值吻合。

  The results obtained fit the experimental values.

- 这些窗户均承受不了这么大的力。

  All these windows cannot withstand a so large force.

提纲

一 词类

二 插入语、否定、时态、语态

三 动词非谓语形式

四 从句

三、动词非谓语形式

➢ 动词不定式

- 动词不定式作主语可使用it作形式主语

  - ✓ It takes dozens of seconds for a computer to solve this problem.
  - ✓ It remains now to determine this coefficient.
  - ✓ It is now possible to convert sunlight into electricity.
  - ✓ It will not be necessary to calculate the component to the magnetic field.

三、动词非谓语形式

➢ 动词不定式

- 动词不定式作定语的几个句型

  -----“介词+which+动词不定式”的形式

  - ✓ We have defined length and time units with which to measure ISO.
  - ✓ We shall use such a field on which to base our discussion of magnetic properties.

三、动词非谓语形式

➢ 动词不定式

◘ 动词不定式作定语的几个句型

----- the ability (tendency) of A to do B 的形式

- ✓ Energy is defined as the ability of a body to do work.
- ✓ The greater the tendency of an object to resist a change of velocity, the greater its inertia.

三、动词非谓语形式

➢ 动词不定式

□ 其它几个句型

- ✓ This computer is easy to operate.
- ✓ We find it very easy to solve this problem.
- ✓ We find this quantity difficult to measure.
- ✓ We have to find how large to make x so as for this inequality to hold.
- ✓ For a transistor to function normally, it is necessary to apply proper voltages to its electrodes.

三、动词非谓语形式

➢ 练习题

- 强调指出了光强随圆柱体直径变换的正弦规律。
- 不仅温度和光影响导电率，而且给半导体加杂质也会使导电率变化很大。
- 人们经常发射各种卫星来获得有关太空的信息。
- 我们的半导体工业是在20世纪50年代形成的。

三、动词非谓语形式

➢ 练习题

- 强调指出了光强随圆柱体直径变换的正弦规律。

The sine law of the variance of the light intensity brought due to the variance of the cylinder diameter has been pointed emphatically.

- 不仅温度和光影响导电率，而且给半导体加杂质也会使导电率变化很大。

Not only temperature and light affect the conductivity, but the addition of impurities to semiconductors also make it to change greatly.

- 人们经常发射各种卫星来获得有关太空的信息。

The various satellites are frequently launched to obtain information about the space.

- 我们的半导体工业是在20世纪50年代形成的。

Our semiconductor industry comes into being in the end of 1950s.

三、动词非谓语形式

➢ 分词

□ 作定语

- ✓ These moving electrons form the current.
- ✓ Distance is equal to speed multiplied by time.

三、动词非谓语形式

➢ 分词

- 作状语: 写作时侧重于在句首和句尾的情况，这是典型的书面语言形式

  - ✓ Having obtained the initial conditions, we go on to solve the network differential equations.
  - ✓ Known as a “man-amplifier”, a machine under development consists of a framework that the operator wears.
  - ✓ Four node equations may be written based on an energy balance.
  - ✓ Equation (5) may be solved using the Laplace transformation.

三、动词非谓语形式

➢ 分词

- 分词独立结构: 写作重点放在处于句尾时作附加说明用，这同样是典型的书面语言形式

  - ✓ The sign of the integral depends on the direction of the path taken, a counter-clockwise direction being taken as positive.
  - ✓ There are several basic laws governing these interactions, all of them discovered early in the nineteenth century.

三、动词非谓语形式

➢ 分词

- with结构: 作状语，作定语

  - ✓ Both practical design techniques and theoretical problems are covered with emphasis on general concepts.
  - ✓ All present states are stable with no inputs present.
  - ✓ The device with buttons on it is a keyboard.
  - ✓ This is an inequality with zero on the right.

三、动词非谓语形式

➢ 动名词

- “by+动名词”意为“通过……”

  - ✓ By analyzing the performance of the device, one can appreciate it better.

三、动词非谓语形式

➢ 动名词

- “on(或upon) +动名词”意为“一……就”，“在……之后”

  - ✓ Upon substituting the actual magnitudes, v turned out to be the velocity.

三、动词非谓语形式

➢ 动名词

- “in+动名词”意为“在……时候、”，“在……过程中”

  - ✓ In using this equation, attention must be paid to the sign.

三、动词非谓语形式

➢ 练习题

- 已知电阻和电流，就能计算出电压来。
- 这台仪器的价格很昂贵。
- 机器人是一种特殊的电子设备。
- 就在我们闭合电路的那一瞬间电流开始流动。

三、动词非谓语形式

➢ 练习题

- 已知电阻和电流，就能计算出电压来。

  Giving resistance and current, voltage can be determined.

- 这台仪器的价格很昂贵。

  The price for this instrument is expensive.

- 机器人是一种特殊的电子设备。

  Robot is a kind of special electronic devices.

- 就在我们闭合电路的那一瞬间电流开始流动。

  The current starts flowing on very moment we close the circuit.

提纲

一 词类

二 插入语、否定、时态、语态

三 动词非谓语形式

四 从句

四、从句

➢ 状语从句

- 表示原因的连词: because/since/as/for

  - ✓ Since k and m are both constants, the ratio k/m is constant.
  - ✓ As air has weight, it exerts force on any object immersed in it.
  - ✓ In previous chapters we did not use the trigonometric, inverse trigonometric, exponential, or logarithmic functions, for the derivative of each of these is a special form.

四、从句

➢ 状语从句

- 表示“当……时候”的连词: when/while/as

✓ When a rocket is launched from the earth’s surface, the thrust of its engines must exceed its weight for it to rise from the ground.

✓ It is possible for a body to remain in one place while it is rotating.

✓ As radio wave travel along the surface of the earth, part of its energy will be lost.

四、从句

➢ 状语从句

- 表示“虽然”的连词: although/though/as/while

  - ✓ The foregoing provides a basis for this theorem, although it cannot be considered as a proof.
  - ✓ Important though this law is, it is seldom used in practice.
  - ✓ Small as electrons are, they play an important role in the formation of electric current.
  - ✓ While x can only lie between −1 and +1, there are an infinite number of values of y for every value of x.

四、从句

➢ 状语从句

◘ 一些特殊的状语从句连接词

- ✓ the moment/instant… = as soon as…
- ✓ at the very moment when…
- ✓ each/every/any time… = whenever…
- ✓ the first/next/last time…
- ✓ the day/night/month/year/time… instantly/directly/immediately… = as soon as…

四、从句

➢ 同位语从句

- 两个常用的固定句型

  - ✓ 毫无疑问—there is no doubt (question) that
  - ✓ 有证据表明—there is evidence that…

四、从句

➢ 同位语从句

◘ 动宾译法的句型

✓ There is a growing awareness that these techniques are also of value in some other areas.

四、从句

➢ 同位语从句

- 由名词从句转变成的同位语从句

✓ The users have no guarantee how long this kind of device will be operating.

四、从句

➢ 名词从句

◘ 采用形式主语it的一些句型

- ✓ It is interesting that every function can be approximated by simple functions.
- ✓ It remains now to be seen when this equation holds.
- ✓ It does not matter in which order two numbers are added.

四、从句

➢ 名词从句

◘ 常用句型

- ✓ It is known that …
- ✓ It is said that …
- ✓ It is reported that …
- ✓ It is believed that …
- ✓ It can be seen that …
- ✓ It has been shown that …
- ✓ It has been found that …
- ✓ It must be pointed out that …
- ✓ It should be noted that …
- ✓ It must be emphasized that …
- ✓ It follows that …
- ✓ It holds that …
- ✓ It appears that …
- ✓ It happens that …
- ✓ It turns out that …
- ✓ It does not matter …

四、从句

➢ 名词从句

□ what从句的句型

- ✓ We must understand what is meant by the slope of a function.
- ✓ It must be clear from what we have already learnt that man is much more than a machine.
- ✓ Sending a signal from one place to another is what is called transmission.
- ✓ In this case, the magnetic induction is 5500 times what it was.

四、从句

➢ 名词从句

◘ 常用句型

- ✓ What is desired is …
- ✓ What has been described above is …
- ✓ What has been discussed above is …
- ✓ What should be pointed out is …
- ✓ What must be emphasized is …
- ✓ What must be noted is …
- ✓ What is important is …

四、从句

➢ 定语从句

- 关系代词在从句中作主语、宾语和定语以及关系副词在从句中作状语的情况

✓ There are some quantities that have direction as well as magnitude.

✓ The meter that we use to measure pressure is known as a pressure gauge.

✓ Two like poles of two magnets repelling each other is the theory on which electric motors work.

✓ A target is the object whose position is to be determined.

✓ It is necessary to determine the time when the y-component has decreased to zero.

四、从句

➢ 定语从句

- 关系代词在从句中作介词宾语而“介词+which”在从句中作状语的句型

  - ✓ Power is the rate at which work is done.
  - ✓ The two elements of which water consists are the gases oxygen and hydrogen.
  - ✓ Any change in which no new substance is formed is a physical change.

四、从句

➢ 定语从句

- 先行词为不定代词（anything, all, little）或被序数词、形容词最高级或形容词（only, no, very等）修饰时，不能用which而只能用that

  - ✓ All that one should do is to adjust the resistance.
  - ✓ Computers are the most efficient assistants that man has ever had.
  - ✓ The only measure that we can take in this case is to connect a capacitor across R.

四、从句

➢ 定语从句

- 在科技文中关系词可省去的三种场合

  ----关系代词在从句中作及物动词的宾语时

  - ✓ Each CPU has a very elementary set of functions it knows how to perform.

四、从句

➢ 定语从句

- 在科技文中关系词可省去的三种场合

----在way, distance, direction, reason, time, number of times, amount等后可以省去关系副词或“介词+which”，这时也可用关系副词that来引导从句

✓ Work is the product of the force and the distance a body moves.

四、从句

➢ 定语从句

- 在科技文中关系词可省去的三种场合

----当关系代词which在从句中作单个介词的介词宾语并且此介词宾语在从句中作状语时可以省去，其条件是一定要把介词置于从句末尾

✓ Like the sun, water is one of the necessities plants cannot go without.

四、从句

➢ 定语从句

- which引导修饰整个主句的非限制性定语从句的三种常用情况

  ----which在从句中作主语

  - ✓ The input may be connected to signal sources that have neither terminal grounded, which often proves to be convenient.

四、从句

➢ 定语从句

- which引导修饰整个主句的非限制性定语从句的三种常用情况

  ----which在从句中作介词宾语的定语

  - ✓ I1 is much greater than I2, in which case I2 can be neglected.
  - ✓ These will be introduced in Section 2-8, by which time the proper method of integration will been developed.

四、从句

➢ 定语从句

- which引导修饰整个主句的非限制性定语从句的三种常用情况

  ----which在从句中作介词宾语

  ✓ In the analysis of the various types of electronic circuits those using solid-state devices are presented first, after which a shorter explanation of circuits using electron tubes is presented.

四、从句

➢ 定语从句

◘ as引导的定语从句

- ✓ As we mentioned earlier, matrices can be used to solve systems of equations.
- ✓ Such meters as we use to measure current are called ammeters.
- ✓ The basic organization of such a system is as shown in Fig.6.

四、从句

➢ 练习题

- 这些特点使电子对抗系统难以截获、分析和干扰这种信号。
- 这些现象的存在及对它们的控制能力使得制造那些器件成为了可能。
- 这种方法降低了对采样网络硬件的要求。
- 异常程度越大，残留的失配就越大，曲线就上扬。

四、从句

➢ 练习题

- 这些特点使电子对抗系统难以截获、分析和干扰这种信号。

  These features make electronic counter-measure systems difficult to intercept and analyze this kind of signal and jam.

- 这些现象的存在及对它们的控制能力使得制造那些器件成为了可能。

  The existence and ability for controlling these phenomena makes those devices possible.

- 这种方法降低了对采样网络硬件的要求。

  This kind of method decreases the requirement to the hardware of a sample network.

- 异常程度越大，残留的失配就越大，曲线就上扬。

  Larger is abnormal extent, larger is the residual mispatch and the curve goes up.

学术英语写作
Scientific Writing

补充

提纲

一 TEX上手

二 学术报告

三 文献检索

一、TEX上手

- 为什么选择TEX?

一、TEX上手

- 为什么选择TEX?

Data-Driven Process Monitoring Using Structured Joint Sparse Canonical Correlation Analysis

中图分类号： 学位代号：10280
密 级： 学 号：

上海大学

硕士学位论文

SHANGHAI UNIVERSITY
MASTER'S DISSERTATION

题目

作 者
学科专业
导 师
完成日期

研究现状

国内外许多专家在典型相关的故障诊断方面做了大量工作, 例如:

- Chen-Zhang-Ding-Shardt-Hu [C16]: 动态系统
- Chen-Ding-Peng-Yang-Gui [C17]: 非高斯过程
- Jiang-Ding-Wang-Yan [J17]: 分布式系统
- Jiang-Yan [J19]: 多模态过程
- Liu-Liu-Zhao-Xie [L18]: 质量相关过程

一、TEX上手

➢ 为什么选择TEX?

$$\nabla\varphi_k(\alpha) = \alpha - Y\theta + \sigma_k X \mathrm{Prox}_{\lambda\|\cdot\|_1}(X^T\alpha - \beta^k/\sigma_k)$$
$$= \alpha - Y\theta + X\mathrm{Prox}_{\sigma_k\lambda\|\cdot\|_1}(\sigma_k X^T\alpha - \beta^k),$$

and

$$\partial(\nabla\varphi_k(\alpha)) = I_n + X\partial\mathrm{Prox}_{\sigma_k\lambda\|\cdot\|_1}(\sigma_k X^T\alpha - \beta^k)(\sigma_k X^T)$$
$$= I_n + \sigma_k X(\partial\mathrm{Prox}_{\sigma_k\lambda\|\cdot\|_1}(\sigma_k X^T\alpha - \beta^k)X^T.$$

For a semi-smooth Newton method to be considered, we begin with discussing the search direction d:

$$Vd = -\nabla\varphi_k(\alpha),\ V \in \partial(\nabla\varphi_k(\alpha)).$$

Note that

$$\partial(\nabla\varphi_k(\alpha)) = \left\{V \in \mathbb{R}^{n\times n} \mid V = I_n + \sigma_k XUX^T\right\},$$

where

$$U \in \partial\mathrm{Prox}_{\sigma_k\lambda\|\cdot\|_1}(\sigma_k X^T\alpha - \beta^k),$$

$$\partial\mathrm{Prox}_{\sigma_k\lambda\|\cdot\|_1}(w) = \left\{U = \mathrm{Diag}(u) \in \mathbb{R}^{p\times p} \mid u_i \in \begin{cases} 1 & \text{if } |w_i| > \sigma_k\lambda, \\ [0,1] & \text{if } |w_i| = \sigma_k\lambda, \\ 0 & \text{if } |w_i| < \sigma_k\lambda. \end{cases} i = 1,\ldots,n.\right\}.$$

We consider

$$XU = [X_1,\ldots,X_p]\begin{bmatrix} u_1 & & \\ & \ddots & \\ & & u_n \end{bmatrix} = [u_1X_1,\ldots,u_pX_p].$$

一、TEX上手

➢ 第一步：安装texlive

TeX Live

TeX Live is intended to be a straightforward way to get up and running with the TeX document production system. It provides a comprehensive TeX system with binaries for most flavors of Unix, including GNU/Linux and macOS, and also Windows. It includes all the major TeX-related programs, macro packages, and fonts that are free software, including support for many languages around the world. Many Unix/GNU/Linux operating systems provide TeX Live via their own distributions and package managers.

- **Concise instructions, per platform:**
  - Unix/GNU/Linux
  - Windows
  - MacOS: MacTeX distribution

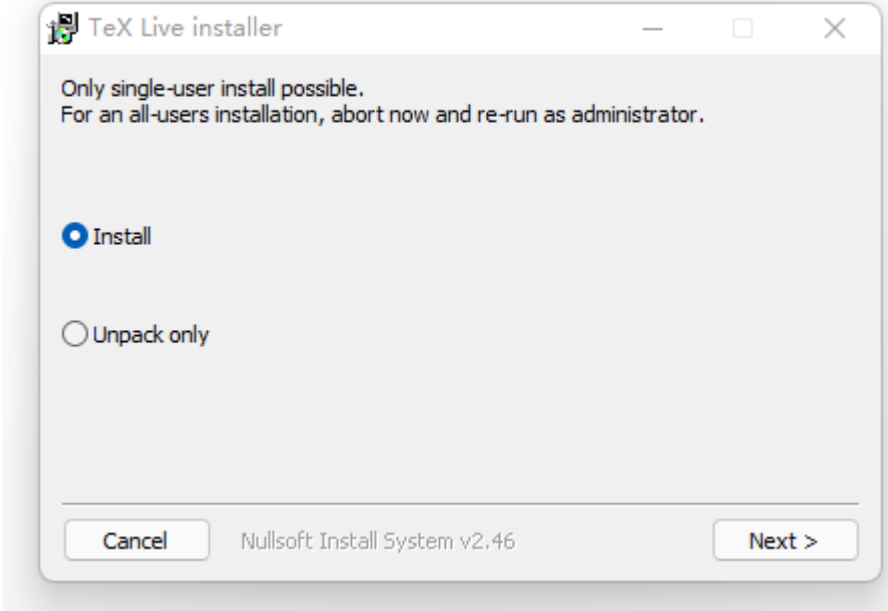
  Read the full manual about all the possibilities, including automated installations and using custom repositories.

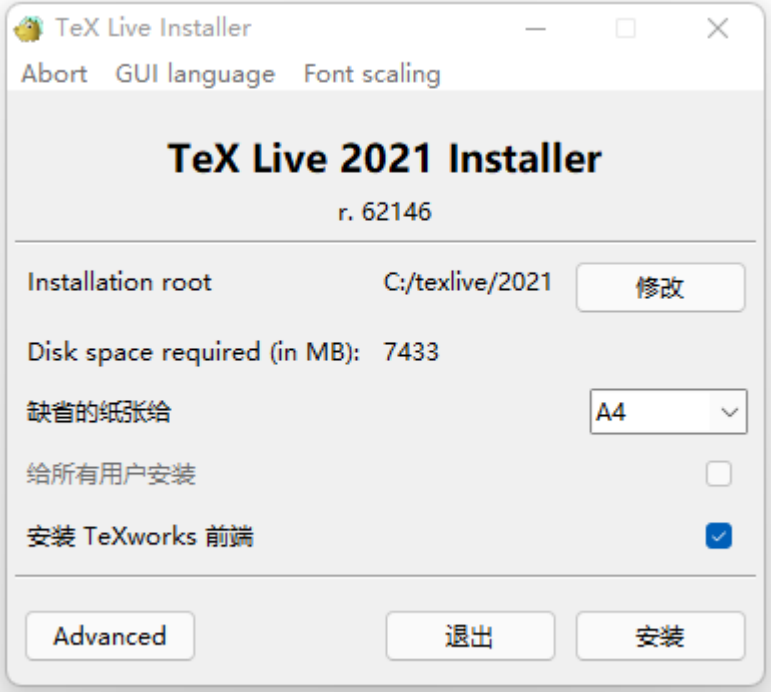
- **All the ways to acquire TeX Live:**
  - download,
  - on DVD,
  - an ISO image or via torrent,
  - other methods.

https://tug.org/texlive/

一、TEX上手

➢ 第一步：安装texlive





一、TEX上手

- 第二步：安装WinEdt

Home | News | About WinEdt | Downloads | Installing | Support | Registration | Snapshots | WinEdt.org | Contact

WinEdt 10

Created with WinEdt™

WinEdt is a powerful and versatile all-purpose text editor for Windows with a strong predisposition towards the creation and compilation of LaTeX documents...

WinEdt is used as a front-end *(Integrated Development Environment)* for compilers and typesetting systems, such as TeX, HTML or NSIS. WinEdt's highlighting schemes can be customized for different modes and its spell checking functionality supports multilingual setups, with dictionaries (word lists) for many languages available on WinEdt's Community Site www.winedt.org. *Contributions are welcome!*

Although reasonably suitable as an all-purpose text editor, WinEdt has been specifically designed and configured to integrate seamlessly with a TeX System (such as MiKTeX or TeX Live). However, WinEdt's documentation does not cover TeX-related topics in depth; you'll find introductions and manuals on typesetting with TeX, as well as links to other recommended accessories, on TeX's Community Site (TUG). For LaTeX-related issues visit LaTeX Community Forum: questions are welcome and help is forthcoming!

https://www.winedt.com/

一、TEX上手

➢ 第二步：安装WinEdt

Downloads and Links

On this page you'll find links to all files you need to download in order to make WinEdt (and TeX) fully operational on your Windov
After downloading and installing WinEdt you may want to check and download available dictionaries (word lists), and add-ons whi
provide additional functionality...

New: WinEdt 10.3

To install WinEdt 10.3 click on the link below and follow the instructions:

- WinEdt 10.3 (64-bit) [Build: 20180507] (winedt103-64.exe 9.2 MB)
- WinEdt 10.3 (32-bit) [Build: 20180507] (winedt103-32.exe 8.9 MB)

Quick Guide

一、TEX上手

- 第三步：安装Sumatra PDF

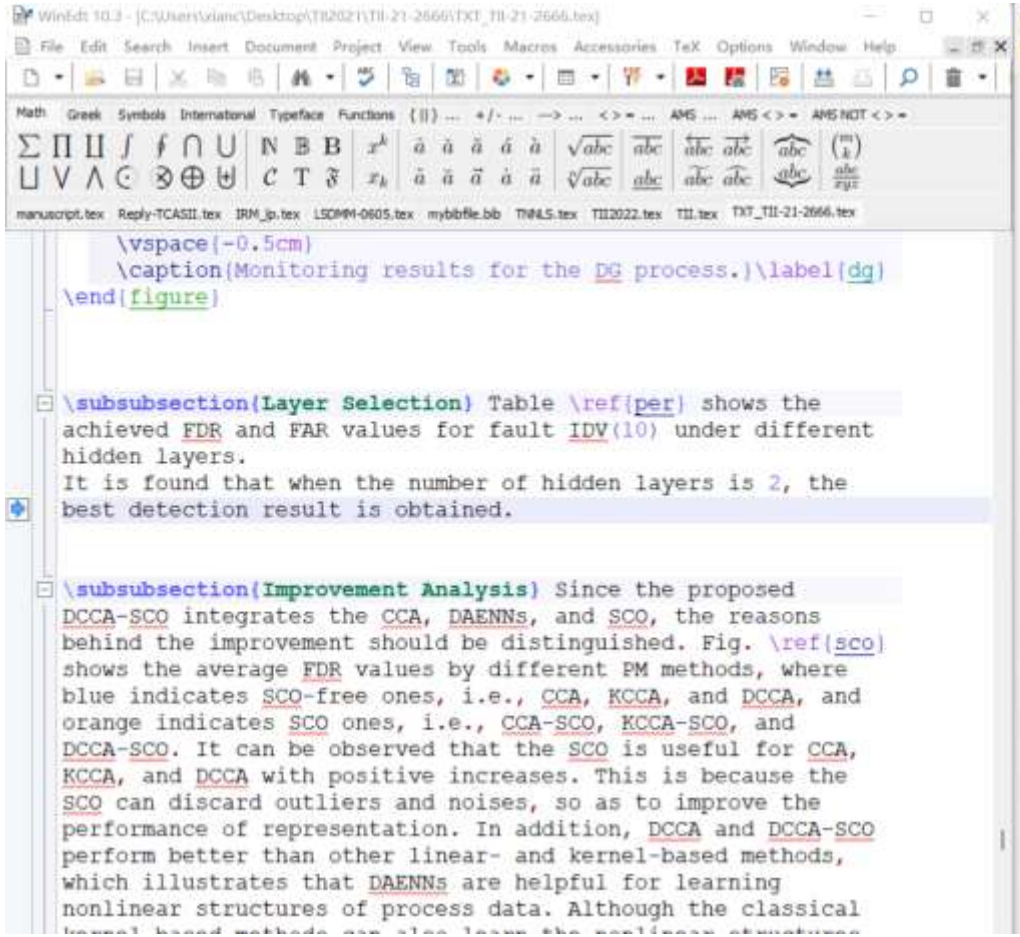
https://www.sumatrapdfreader.org/free-pdf-reader

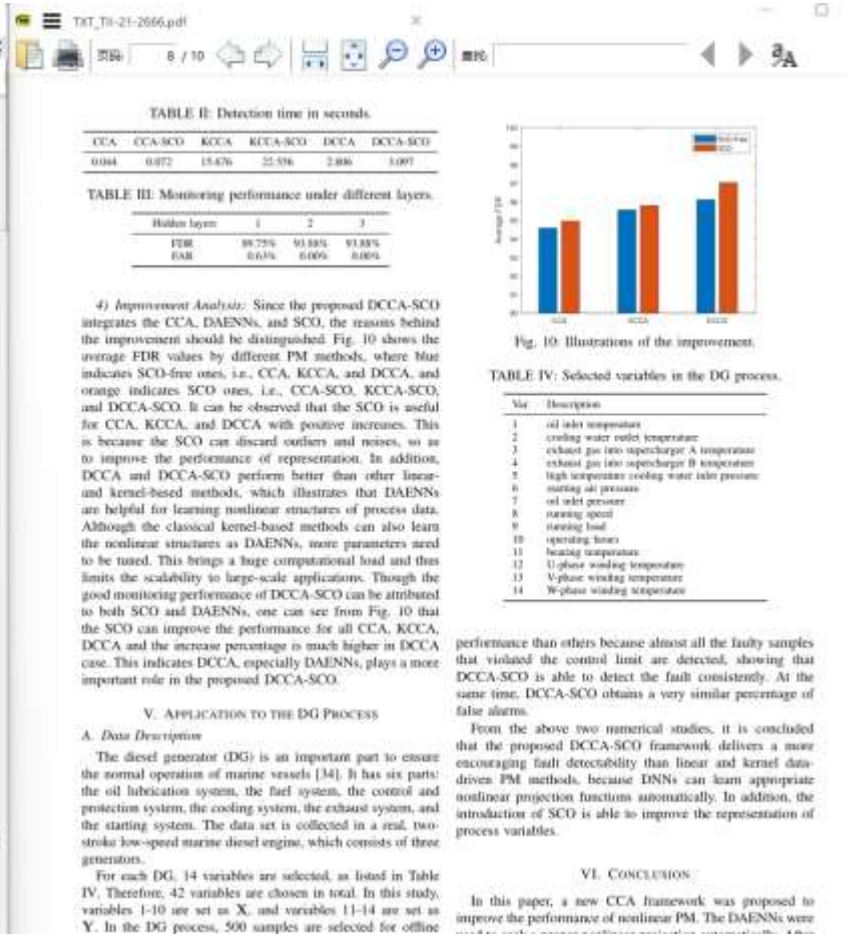
一、TEX上手

- 第三步：安装Sumatra PDF

一、TEX上手

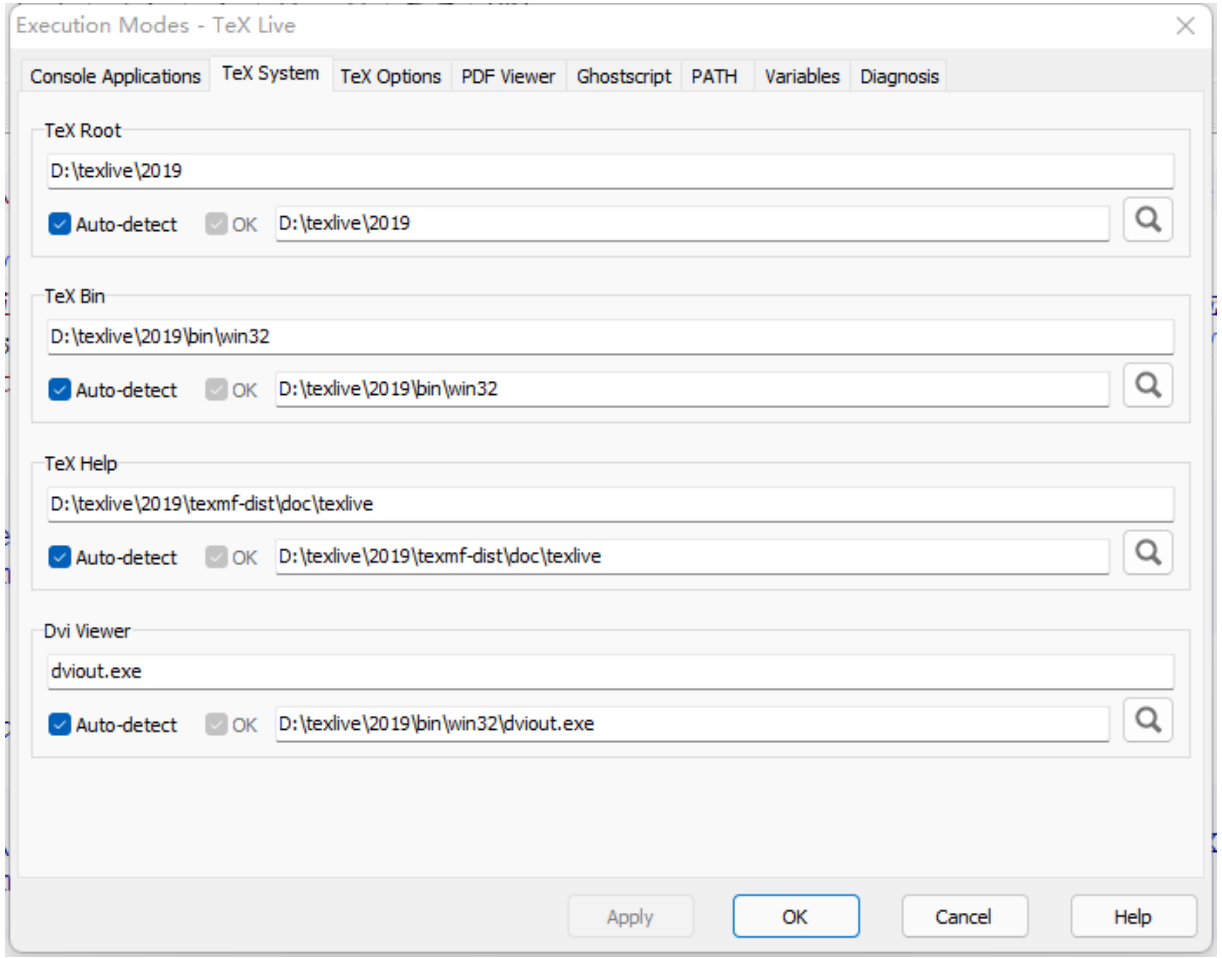
- 例子


WinEdt 10.3 - [C:\Users\xianc\Desktop\TII2021\TII-21-2666\TXT_TII-21-2666.tex]
File Edit Search Insert Document Project View Tools Macros Accessories TeX Options Window Help
Math Greek Symbols International Typeface Functions
manuscript.tex Reply-TCASII.tex IRM_jp.tex LSDMM-0605.tex mybibfile.bib TNNLS.tex TII2022.tex TII.tex TXT_TII-21-2666.tex
\vspace{-0.5cm}
\caption{Monitoring results for the DG process.}\label{dg}
\end{figure}
\subsubsection{Layer Selection} Table \ref{per} shows the achieved FDR and FAR values for fault IDV(10) under different hidden layers.
It is found that when the number of hidden layers is 2, the best detection result is obtained.
\subsubsection{Improvement Analysis} Since the proposed DCCA-SCO integrates the CCA, DAENNs, and SCO, the reasons behind the improvement should be distinguished. Fig. \ref{sco} shows the average FDR values by different PM methods, where blue indicates SCO-free ones, i.e., CCA, KCCA, and DCCA, and orange indicates SCO ones, i.e., CCA-SCO, KCCA-SCO, and DCCA-SCO. It can be observed that the SCO is useful for CCA, KCCA, and DCCA with positive increases. This is because the SCO can discard outliers and noises, so as to improve the performance of representation. In addition, DCCA and DCCA-SCO perform better than other linear- and kernel-based methods, which illustrates that DAENNs are helpful for learning nonlinear structures of process data. Although the classical


TXT_TII-21-2666.pdf
TABLE II: Detection time in seconds.
TABLE III: Monitoring performance under different layers.
TABLE IV: Selected variables in the DG process.
Fig. 10: Illustrations of the improvement.
V. Application to the DG Process
A. Data Description
VI. Conclusion

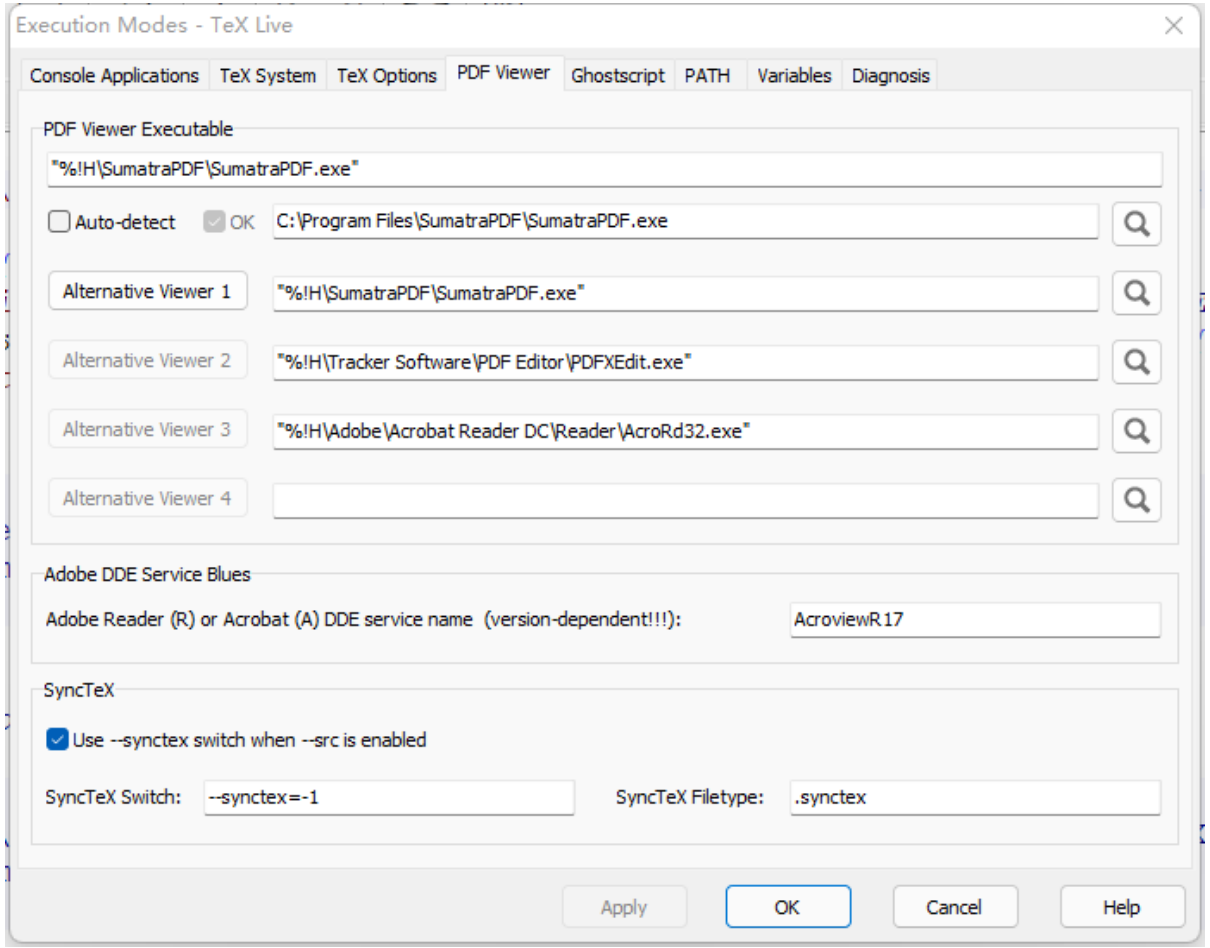
一、TEX上手

- 第四步：配置



一、TEX上手

- 第四步：配置



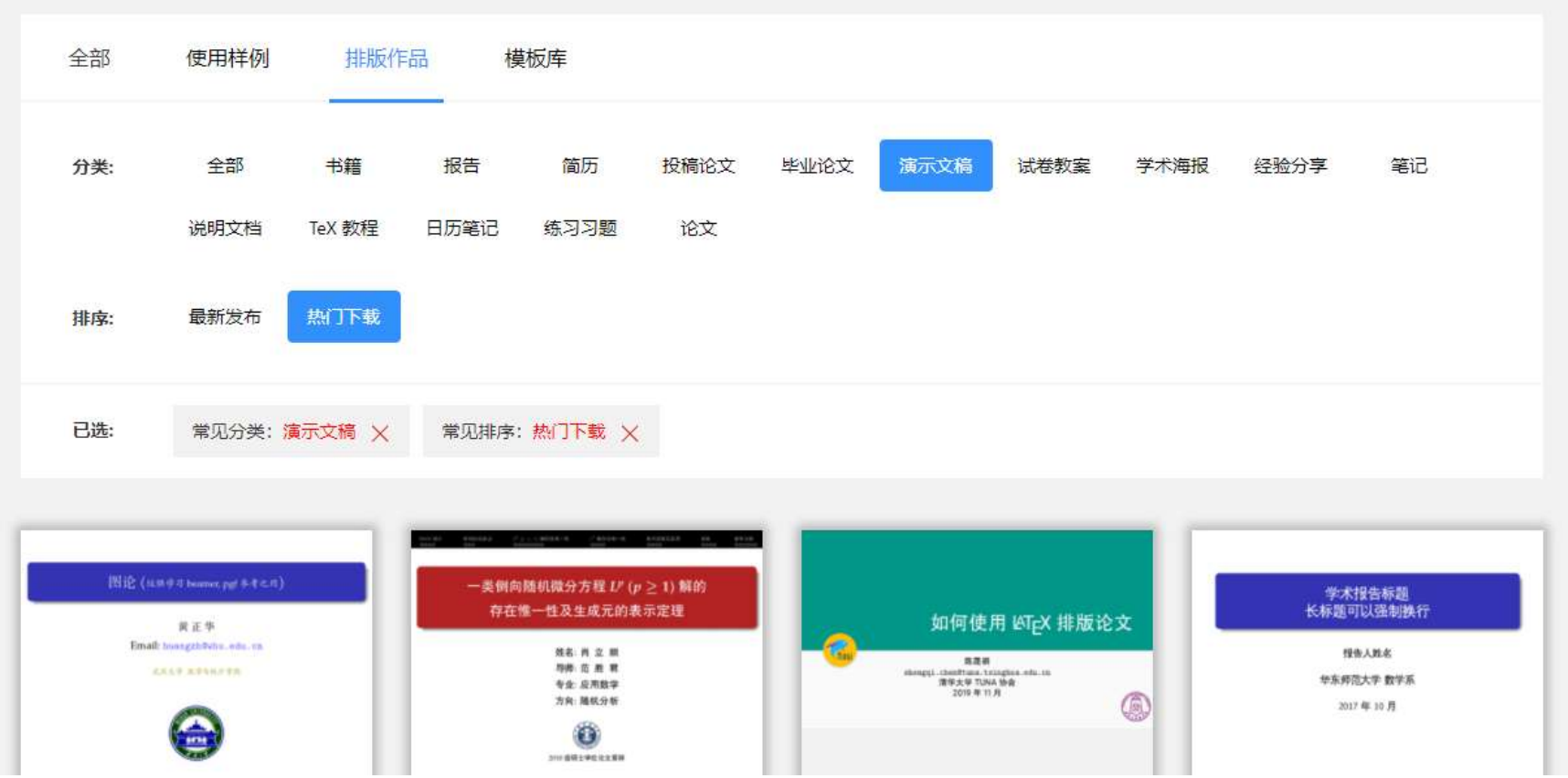
一、TEX上手

- 第五步：下载模板

https://www.latexstudio.net/

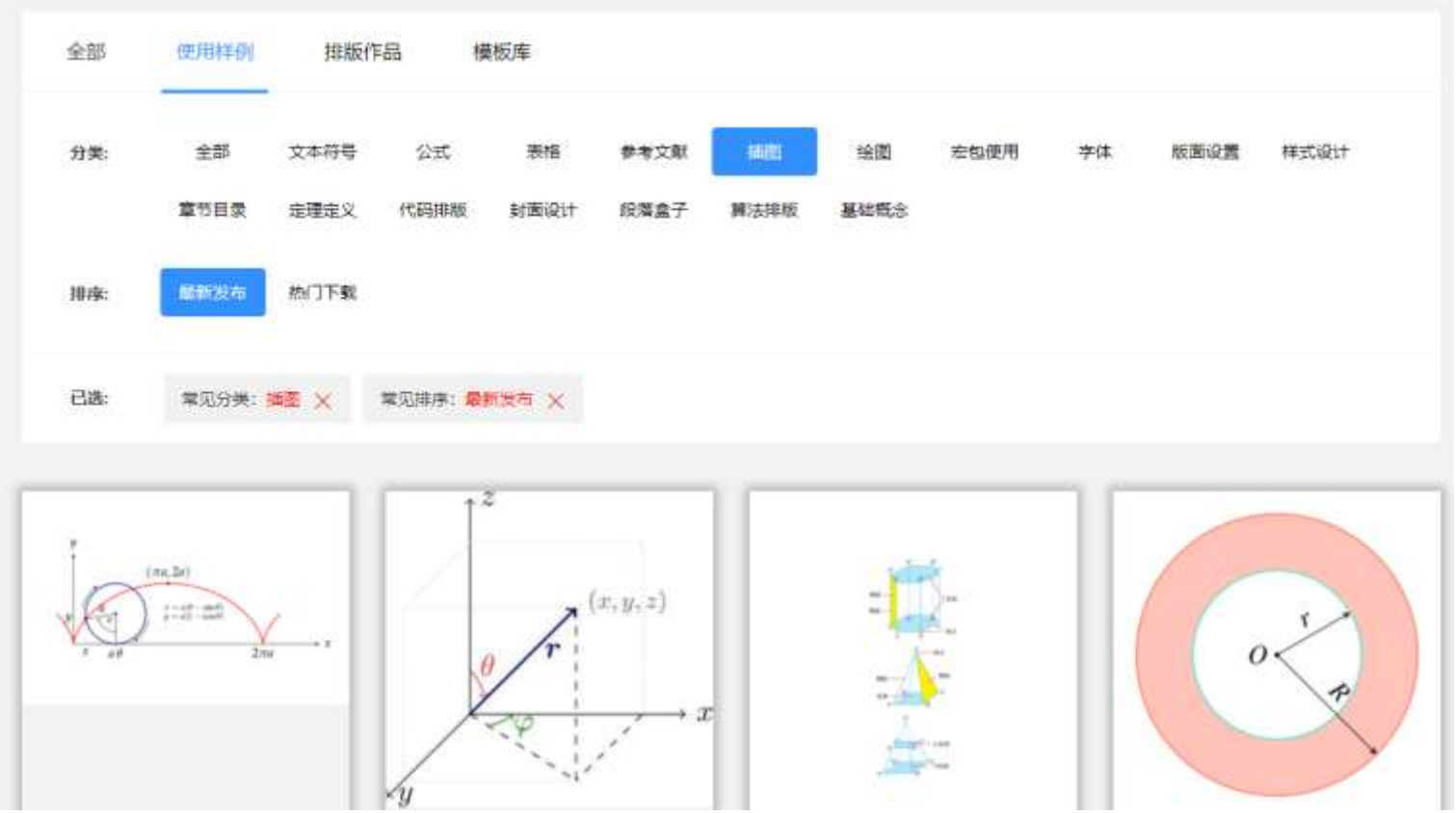
一、TEX上手

➢ 第五步：下载模板



一、TEX上手

➢ 第五步：下载模板



一、TEX上手

➢ 第五步：下载模板

一、TEX上手

- 例子

IEEE
IEEE.org | IEEE Xplore Digital Library | IEEE Author Center
IEEE
TEMPLATE SELECTOR
Select Publication Type
Select Publication
Select Article Type
Select Format
Download Template
Find the right IEEE article template for your target publication.
Please select your publication type below.
Transactions, Journals and Letters
Magazines
Conferences
Use the IEEE Publication Recommender if you don't know where you want to publish.

提纲

一 TEX上手

二 学术报告

三 文献检索

二、学术报告

- Designing Effective Scientific Presentation

https://www.bilibili.com/video/av755406820/

二、学术报告

➢ 学术PPT需要区分场合

- Job talk
- 学术报告
- 开题报告
- 论文答辩
- 组会报告
- 研究基金申请报告

提纲

一 TEX上手

二 学术报告

三 文献检索

三、文献检索

➢ 如何阅读文献?

Contents lists available at ScienceDirect

Automatica

journal homepage: www.elsevier.com/locate/automatica

Brief paper

Geometric properties of partial least squares for process monitoring☆

Gang Li [a], S. Joe Qin [b,c,*], Donghua Zhou [a,*]

[a] Department of Automation, TNList, Tsinghua University, Beijing 100084, PR China

[b] The Mork Family Department of Chemical Engineering and Materials Science, University of Southern California, Los Angeles, CA 90089, USA

[c] Ming Hsieh Department of Electrical Engineering, University of Southern California, Los Angeles, CA 90089, USA

三、文献检索

➢ 第一步：了解作者

Contents lists available at ScienceDirect

Automatica

journal homepage: www.elsevier.com/locate/automatica

Brief paper

Geometric properties of partial least squares for process monitoring☆

Gang Li [a], S. Joe Qin [b,c,*], Donghua Zhou [a,*]

[a] Department of Automation, TNList, Tsinghua University, Beijing 100084, PR China

[b] The Mork Family Department of Chemical Engineering and Materials Science, University of Southern California, Los Angeles, CA 90089, USA

[c] Ming Hsieh Department of Electrical Engineering, University of Southern California, Los Angeles, CA 90089, USA

三、文献检索

- 第二步：关注引用情况

[HTML] Geometric properties of partial least squares for process monitoring

G Li, SJ Qin, D Zhou - Automatica, 2010 - Elsevier

Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input X, while principal component analysis (PCA) produces ...

☆ 保存 99 引用 被引用次数：328 相关文章 所有 12 个版本

Google 学术搜索

三、文献检索

- 第三步：认真阅读Abstract

ABSTRACT

Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input **X**, while principal component analysis (PCA) produces unsupervised decomposition of input **X**. In this paper, the effect of output **Y** on the **X**-space decomposition in PLS is analyzed and geometric properties of the PLS structure are revealed. Several PLS algorithms are compared in a geometric way for the purpose of process monitoring. A numerical example and a case study are given to illustrate the analysis results.

© 2009 Elsevier Ltd. All rights reserved.

三、文献检索

➢ 第四步：详细查阅Introduction

1. Introduction

Multivariate statistical process monitoring (SPM) has been successfully used in the monitoring of different industrial processes over the past two decades, including chemicals, polymers, and microelectronics manufacturing. Multivariate statistical process control charts based on principal component analysis (PCA), projection to latent structures (PLS), and other data-based structures have received great success in practice (Kresta, MacGregor & Marlin, 1991; Qin, 2003; Wise & Gallagher, 1996; Xia, Howell & Thornhill, 2005). Besides, fault reconstruction and estimation can be performed based on the latent space of PCA (Dunia & Qin, 1998; Qin, 2003), which enhances the application of SPM significantly.

To monitor all the variations and abnormal situations of input measurements (**X**), one can perform a PCA decomposition on the **X**-space. However, a more important objective of process monitoring is to provide assurance of good product quality that is impacted by the process conditions. Quality variables (**Y**) are affected by the processing conditions reflected in the measured **X**-data and possibly additional unmeasured factors. The quality data **Y** are often difficult to measure, and often come very infrequently with significant measurement delays. To monitor variations in the process variables that are most relevant to quality variables (**Y**), one can perform PLS decomposition on **X**-space.

The basic concepts and algorithms of PLS can be found in the chemometrics literature (Di Ruscio, 2000; Höskuldsson, 1988; Ter Braak & De Jong, 1998). PLS has been used in multivariate monitoring of process operating performance, which is almost exactly in the same way as PCA-based monitoring (Kresta et al., 1991). Several variants of PLS have been proposed for monitoring, such as multi-block PLS (MacGregor, Jaeckle, Kiparissides & Koutoudi, 1994), dynamic PLS (Lee, Han & Yoon, 2004), recursive PLS (Qin, 1998) and multi-phase PLS (Lu, Gao & Wang, 2004).

Although PLS-based monitoring has been used for a long time, the property of the latent space induced by PLS has not been analyzed for process monitoring. While PCA-based monitoring methods are well understood (e.g., Alcala & Qin, 2009), it is not clear how **Y** affects the decomposition of **X**-space and the outcome of process monitoring. Westerhuis, Gurden and Smilde (2000) proposed generalized T^2 and Q statistics for many latent variable models (including PLS). The structure they used can be regarded as the structure of simplified PLS (SIMPLS) (De Jong, 1993). However, it is still an open question as to which PLS algorithm is the most appropriate for process monitoring.

In this paper, we show geometrically the **X**-space decomposition supervised by **Y** using PLS relative to PCA. Then, we reveal the geometric property of the decomposition induced by PLS. It is made clear why and how PLS should be used in process monitoring. Three PLS algorithms are analyzed in detail and the most appropriate structure for monitoring is pointed out.

The remainder of this paper is organized as follows. Section 2 reviews the standard PLS algorithm and its properties. Then, we

---

☆ The material in this paper was not presented at any conference. This paper was recommended for publication in revised form by Associate Editor Denis Dochain under the direction of Editor Frank Allgöwer.

* Corresponding author.
E-mail addresses: sqin@usc.edu (S.J. Qin), zdh@tsinghua.edu.cn (D. Zhou).

三、文献检索

➢ 第五步：跳到Conclusion

7. Conclusions

PLS has been widely used for monitoring complex industrial processes when quality variables are taken into account. There is, however, a lack of understanding of PLS geometry for the purpose of process monitoring. In this paper, the effect of **Y** on the decomposition of the **X**-space is clearly shown and the geometric interpretation of the PLS decomposition structure is given. Based on this interpretation, two alternative algorithms of PLS, W-PLS and SIMPLS, are compared with the standard PLS in terms of the latent space decomposition and process monitoring. It is demonstrated that orthogonal sample space decomposition achieved by PLS is critical for process monitoring. It is concluded from analysis and simulation that monitoring using W-PLS and SIMPLS will cause ambiguous alarms and more missed alarms than the standard PLS. The standard PLS is the most appropriate for process monitoring among these alternative algorithms.

三、文献检索

➢ 第六步：返回查看细节

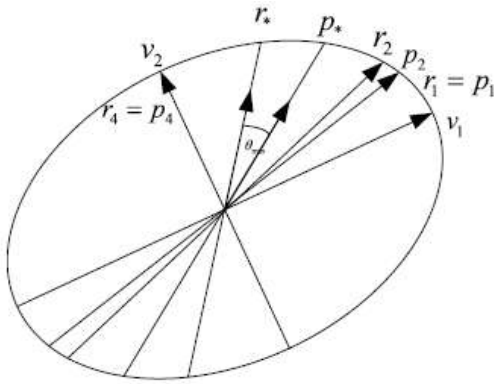


Fig. 1. Effect on **X**-space decomposition by **y**.

From (12), it can be observed that max $\angle(\mathbf{r}, \mathbf{p})$ is close to 0 when λ_2 is close to λ_1.

Fig. 1 describes different cases in a geometric way. In PCA, the **X**-space is decomposed by $\mathbf{v}_1$ and $\mathbf{v}_2$. In PLS, it depends on **X** and **y** jointly. If $c_2 = 0$, then **r** coincide with $\mathbf{v}_1$, which forms the same decomposition as PCA. $\mathbf{r}_1$ and $\mathbf{p}_1$ in Fig. 1 denote this case. If **y** is more related to $\mathbf{t}_2$ and less to $\mathbf{t}_1$, then **r** is chosen to be farther from $\mathbf{v}_1$ and closer to $\mathbf{v}_2$,which causes $\angle(\mathbf{r}, \mathbf{p})$ to increase. The case is described by $\mathbf{r}_2$, $\mathbf{p}_2$ in Fig. 1. The largest angle between vectors **r** and **p** are represented by $\mathbf{r}^*$, $\mathbf{p}^*$. If $c_1 = 0$, **y** is only related to $\mathbf{t}_2$, then **r** and **p** overlap again ($\mathbf{r} = \mathbf{p} = \mathbf{v}_2$), which are denoted by $\mathbf{r}_4$ and $\mathbf{p}_4$, respectively.

Lemma 1. *Let $\Pi_{P|R^\perp}$ denote the projector onto the subspace* Span{**P**}, *along the subspace* Span{**R**}$^\perp$.

$$\begin{aligned} \Pi_{P|R^\perp} &= \mathbf{P}\mathbf{R}^{\mathrm{T}} \\ \Pi_{R^\perp|P} &= \mathbf{I} - \mathbf{P}\mathbf{R}^{\mathrm{T}}. \end{aligned} \tag{15}$$

The proof is given in Appendix A.

From Lemma 1, we have the following theorem on the PLS decomposition:

Theorem 1. *PLS induces an oblique decomposition on input variable space:*

$$\begin{aligned} \mathbf{x} &= \hat{\mathbf{x}} + \tilde{\mathbf{x}} \\ \hat{\mathbf{x}} &= \mathbf{P}\mathbf{R}^{\mathrm{T}}\mathbf{x} \in S_p \equiv \mathrm{Span}\{\mathbf{P}\} \\ \tilde{\mathbf{x}} &= (\mathbf{I} - \mathbf{P}\mathbf{R}^{\mathrm{T}})\mathbf{x} \in S_r \equiv \mathrm{Span}\{\mathbf{R}\}^\perp. \end{aligned} \tag{16}$$

The theorem can be proven by noting from Lemma 1 that

$$\mathrm{Span}\{\mathbf{I} - \mathbf{P}\mathbf{R}^{\mathrm{T}}\} = \mathrm{Span}\{\mathbf{R}\}^\perp. \tag{17}$$

Different from PCA, $\hat{\mathbf{x}}$ is not orthogonal to $\tilde{\mathbf{x}}$ in PLS. Therefore, we conclude that in the PLS model, $\hat{\mathbf{x}}$ is the projection of **x** onto Span{**P**} along Span{**R**}$^\perp$ and $\tilde{\mathbf{x}}$ is the projection of **x** onto Span{**R**}$^\perp$ along Span{**P**}.

三、文献检索

➢ 第七步：确定重要关注文献

References

Alcala, C., & Qin, S. (2009). Reconstruction-based contribution for process monitoring. *Automatica*, *45*(7), 1593–1600.

Chiang, L. H., Russell, E., & Braatz, R. D. (2001). *Fault detection and diagnosis in industrial systems*. London: Springer.

Choi, S. W., & Lee, I. B. (2005). Multiblock PLS-based localized process diagnosis. *Journal of Process Control*, *15*(3), 295–306.

Dayal, B. S., & MacGregor, J. F. (1997). Improved PLS algorithms. *Journal of Chemometrics*, *11*(1), 73–85.

De Jong, S. (1993). SIMPLS: An alternative approach to partial least squares regression. *Chemometrics and Intelligent Laboratory Systems*, *18*(3), 251–263.

Di Ruscio, D. (2000). A weighted view on the partial least-squares algorithm. *Automatica*, *36*(6), 831–850.

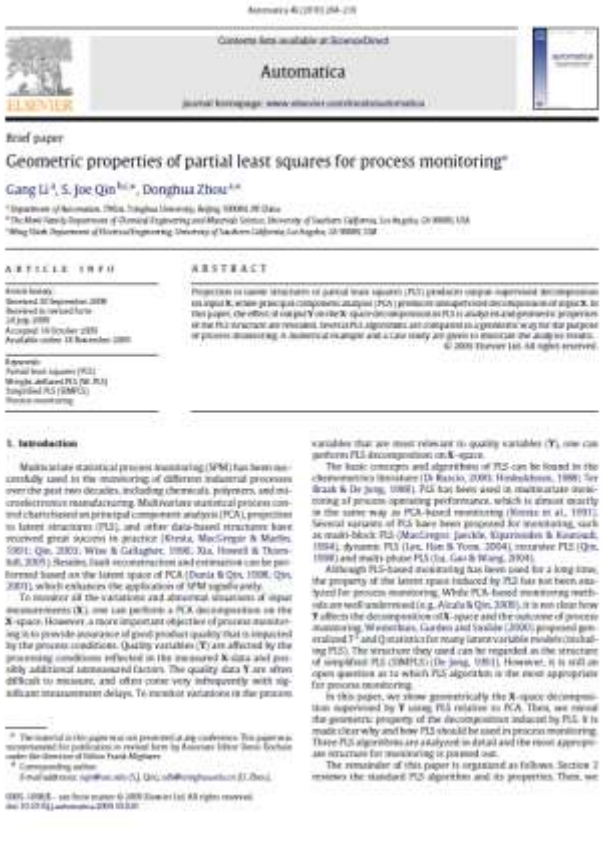
Downs, J. J., & Vogel, E. F. (1993). A plant-wide industrial process control problem. *Computers & Chemical Engineering*, *17*(3), 245–255.

Dunia, R., & Qin, S. J. (1998). Subspace approach to multidimensional fault identification and reconstruction. *AIChE Journal*, *44*(8), 1813–1831.

Helland, I. S. (1988). On the structure of partial least squares regression. *Communications in Statistics-Simulation and Computation*, *17*(2), 581–607.

三、文献检索

➢ 第八步：反复品味

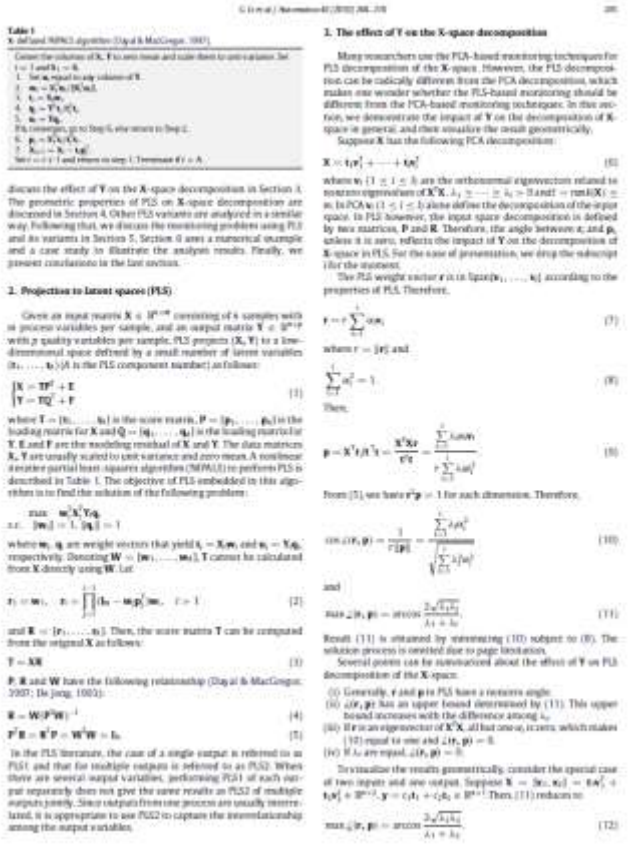


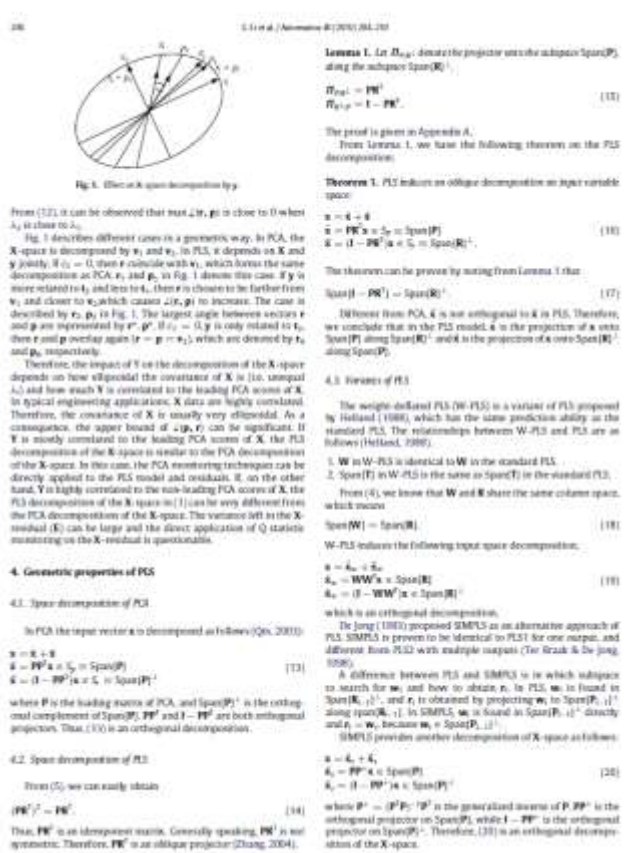
Automatica

Brief paper

Geometric properties of partial least squares for process monitoring*

Gang Li, S. Joe Qin, Donghua Zhou





三、文献检索

➢ 第九步：查看引用

时间不限
2022以来
2021以来
2018以来
自定义范围...

按相关性排序
按日期排序

不限语言
中文网页
简体中文网页

创建快讯

Geometric properties of partial least squares for process monitoring

在引用文章中搜索

A review on basic data-driven approaches for industrial process monitoring
S Yin, SX Ding, X Xie, H Luo - IEEE Transactions on Industrial ..., 2014 - ieeexplore.ieee.org
Recently, to ensure the reliability and safety of modern large-scale industrial processes, data-driven methods have been receiving considerably increasing attention, particularly for the ...
☆ 保存 引用 被引用次数：1250 相关文章 所有 3 个版本

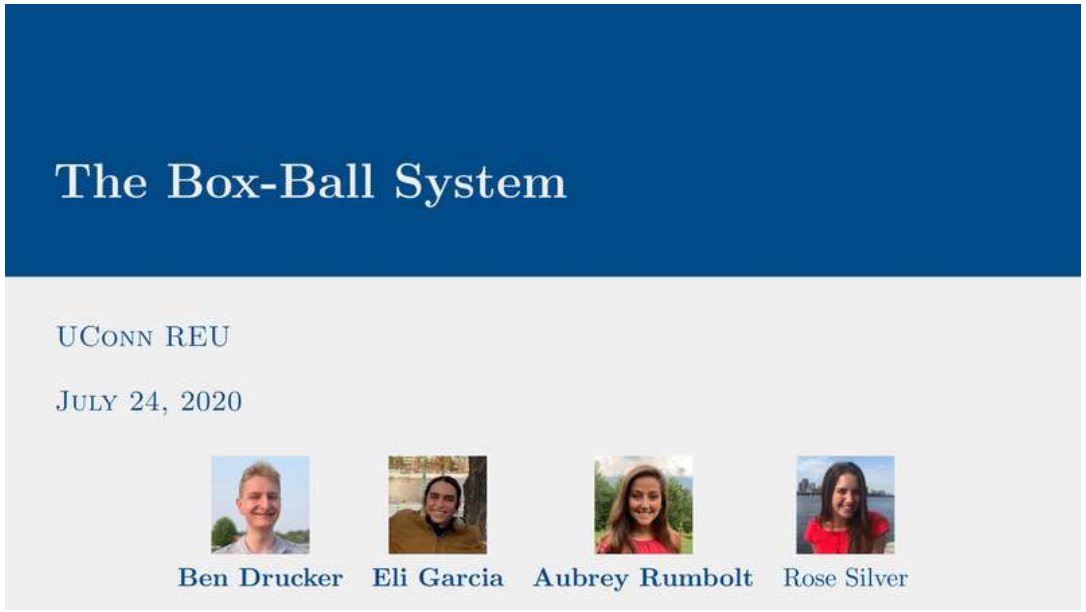
[HTML] Survey on data-driven industrial process monitoring and diagnosis
SJ Qin - Annual reviews in control, 2012 - Elsevier
This paper provides a state-of-the-art review of the methods and applications of data-driven fault detection and diagnosis that have been developed over the last two decades. The ...
☆ 保存 引用 被引用次数：1155 相关文章 所有 5 个版本

[HTML] A comparison study of basic data-driven fault diagnosis and process monitoring methods on the benchmark Tennessee Eastman process
S Yin, SX Ding, A Haghani, H Hao, P Zhang - Journal of process control, 2012 - Elsevier
This paper provides a comparison study on the basic data-driven methods for process monitoring and fault diagnosis (PM–FD). Based on the review of these methods and their ...
☆ 保存 引用 被引用次数：1155 相关文章 所有 5 个版本

Data-based techniques focused on modern industry: An overview
S Yin, X Li, H Gao, O Kaynak - IEEE Transactions on Industrial ..., 2014 - ieeexplore.ieee.org
This paper provides an overview of the recent developments in data-based techniques focused on modern industrial applications. As one of the hottest research topics for ...
☆ 保存 引用 被引用次数：865 相关文章 所有 2 个版本

三、文献检索

➢ 第十步：读书笔记



三、文献检索

➢ 百度 VS Google

Geometric properties of partial least squares for process monitoring

来自 Elsevier | ♡ 喜欢 0　阅读量：263

作者：L Gang，SJ Qin，D Zhou

摘要：Projection to latent structures or partial least squares (PLS) produces output-supervised decompositi while principal component analysis (PCA) produces unsupervised decomposition of input . In this pa effect of output on the -space decomposition in PLS is analyzed and geometric properties of the PLS are revealed. Several PLS algorithms are compared in a geometric way for the purpose of process m numerical example and a case study are given to illustrate the analysis results.

关键词：Practical, Theoretical or Mathematical/ least squares approximations principal component analysis process monitoring/ partial least square process monitoring principal component analysis PCA output supervised decomposition
latent structure/ C3350 Control in industrial production systems C4130 Interpolation and function approximation (numerical analysis) C1140Z Other topics in statistics E1525 Industrial processes E021 Statistics

DOI：10.1016/j.automatica.2009.10.030

被引量：209

年份：2010

[HTML] Geometric properties of partial least squares for process monitoring

G Li, SJ Qin, D Zhou - Automatica, 2010 - Elsevier

Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input X, while principal component analysis (PCA) produces unsupervised decomposition of input X. In this paper, the effect of output Y on the X-space decomposition in PLS is analyzed and geometric properties of the PLS structure are revealed. Several PLS algorithms are compared in a geometric way for the purpose of process monitoring. A numerical example and a case study are given to illustrate the …

☆ 保存　99 引用　被引用次数：328　相关文章　所有 12 个版本

三、文献检索

➢ 如何引用

[HTML] Geometric properties of partial least squares for process monitoring

G Li, SJ Qin, D Zhou - Automatica, 2010 - Elsevier

Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input X, while principal component analysis (PCA) produces unsupervised decomposition of input X. In this paper, the effect of output Y on the X-space decomposition in PLS is analyzed and geometric properties of the PLS structure are revealed. Several PLS algorithms are compared in a geometric way for the purpose of process monitoring. A numerical example and a case study are given to illustrate the …

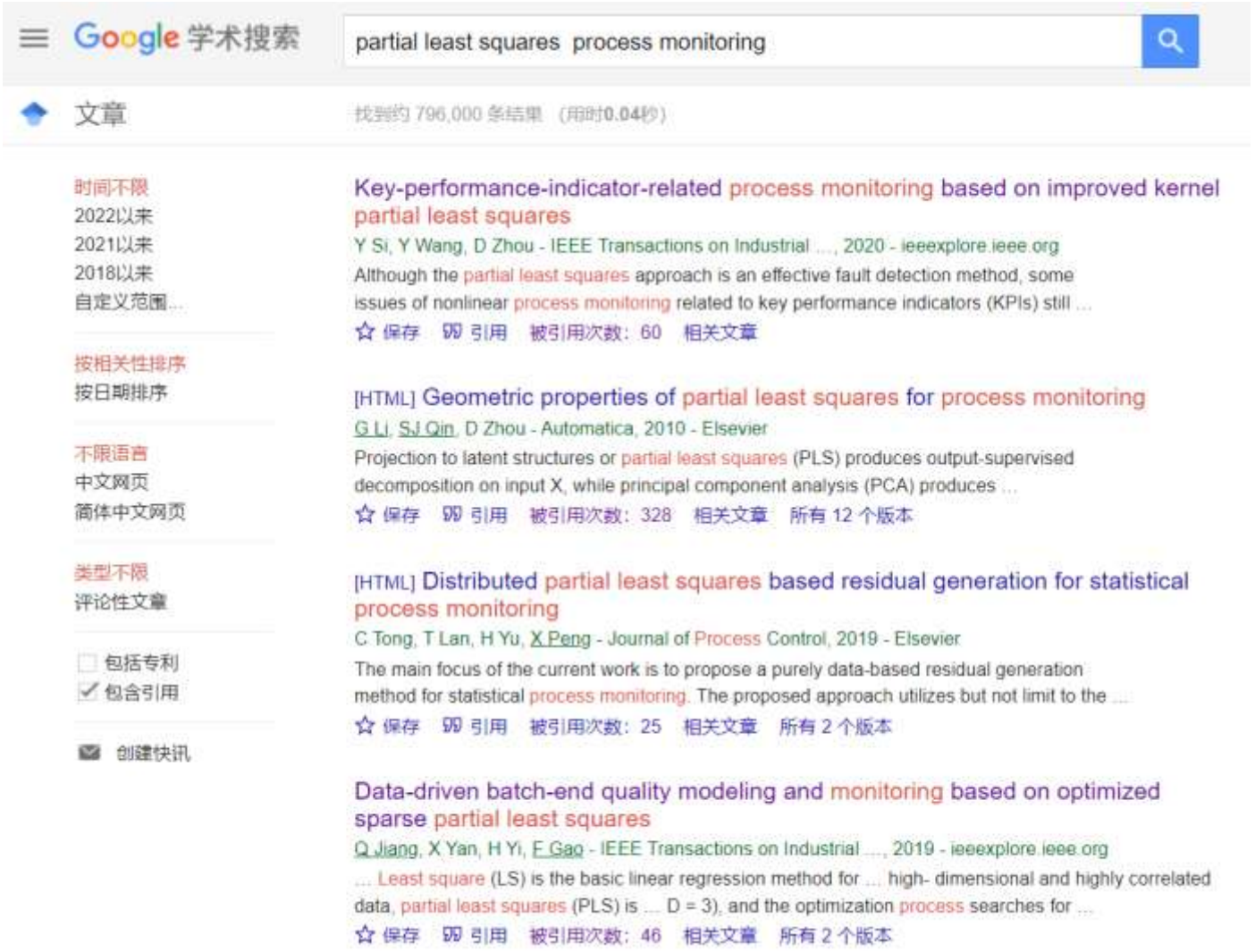
☆ 保存 99 引用 被引用次数：328 相关文章 所有 12 个版本

```
@article{li2010geometric,
  title={Geometric properties of partial least squares for process monitoring},
  author={Li, Gang and Qin, S Joe and Zhou, Donghua},
  journal={Automatica},
  volume={46},
  number={1},
  pages={204--210},
  year={2010},
  publisher={Elsevier}
}
```

三、文献检索

➢ 查看关键词

高级搜索
查找文章
包含全部字词
partial least squares process monitoring
包含完整字句
包含至少一个字词
不包含字词
出现搜索字词位置
文章中任何位置
位于文章标题
显示以下作者所著的文章:
例如: 丁肇中 或 "PJ Hayes"
显示以下刊物上的文章:
例如: 《学术探索》或 《Nature》
显示在此期间发表的文章:
2018
例如: 1996

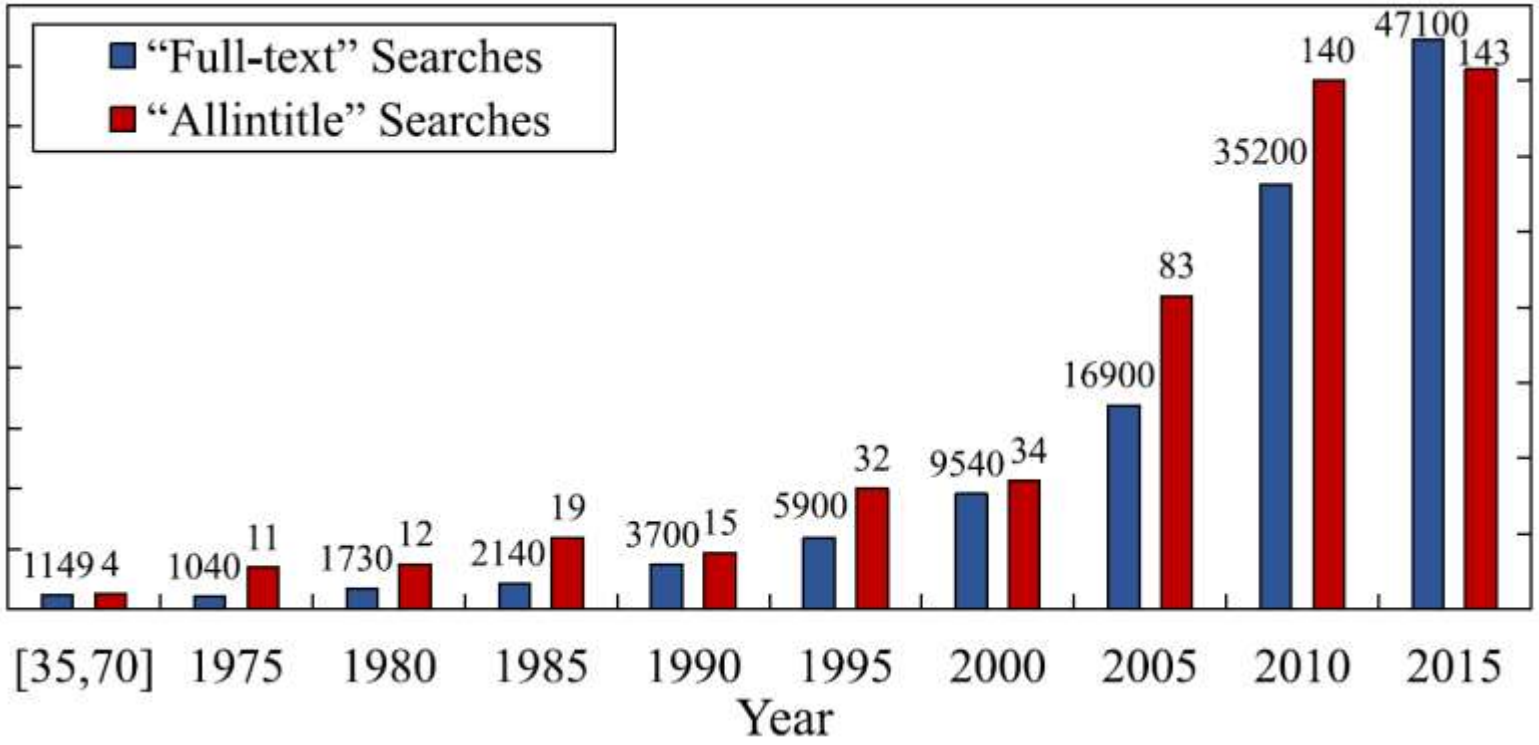

Google 学术搜索
partial least squares process monitoring
文章
找到约 796,000 条结果 (用时0.04秒)
时间不限
2022以来
2021以来
2018以来
自定义范围...
按相关性排序
按日期排序
不限语言
中文网页
简体中文网页
类型不限
评论性文章
包括专利
包含引用
创建快讯
Key-performance-indicator-related process monitoring based on improved kernel partial least squares
Y Si, Y Wang, D Zhou - IEEE Transactions on Industrial ..., 2020 - ieeexplore.ieee.org
Although the partial least squares approach is an effective fault detection method, some issues of nonlinear process monitoring related to key performance indicators (KPIs) still ...
☆ 保存 99 引用 被引用次数: 60 相关文章
[HTML] Geometric properties of partial least squares for process monitoring
G Li, SJ Qin, D Zhou - Automatica, 2010 - Elsevier
Projection to latent structures or partial least squares (PLS) produces output-supervised decomposition on input X, while principal component analysis (PCA) produces ...
☆ 保存 99 引用 被引用次数: 328 相关文章 所有 12 个版本
[HTML] Distributed partial least squares based residual generation for statistical process monitoring
C Tong, T Lan, H Yu, X Peng - Journal of Process Control, 2019 - Elsevier
The main focus of the current work is to propose a purely data-based residual generation method for statistical process monitoring. The proposed approach utilizes but not limit to the ...
☆ 保存 99 引用 被引用次数: 25 相关文章 所有 2 个版本
Data-driven batch-end quality modeling and monitoring based on optimized sparse partial least squares
Q Jiang, X Yan, H Yi, F Gao - IEEE Transactions on Industrial ..., 2019 - ieeexplore.ieee.org
... Least square (LS) is the basic linear regression method for ... high- dimensional and highly correlated data, partial least squares (PLS) is ... D = 3), and the optimization process searches for ...
☆ 保存 99 引用 被引用次数: 46 相关文章 所有 2 个版本

三、文献检索

➢ Allintitle

三、文献检索

➢ 例子


"Full-text" Searches
"Allintitle" Searches
1149
4
1040
11
1730
12
2140
19
3700
15
5900
32
9540
34
16900
83
35200
140
47100
143
[35,70]
1975
1980
1985
1990
1995
2000
2005
2010
2015
Year

三、文献检索

SCI-HUB
...to remove all barriers in the way of science
enter URL, PMID / DOI

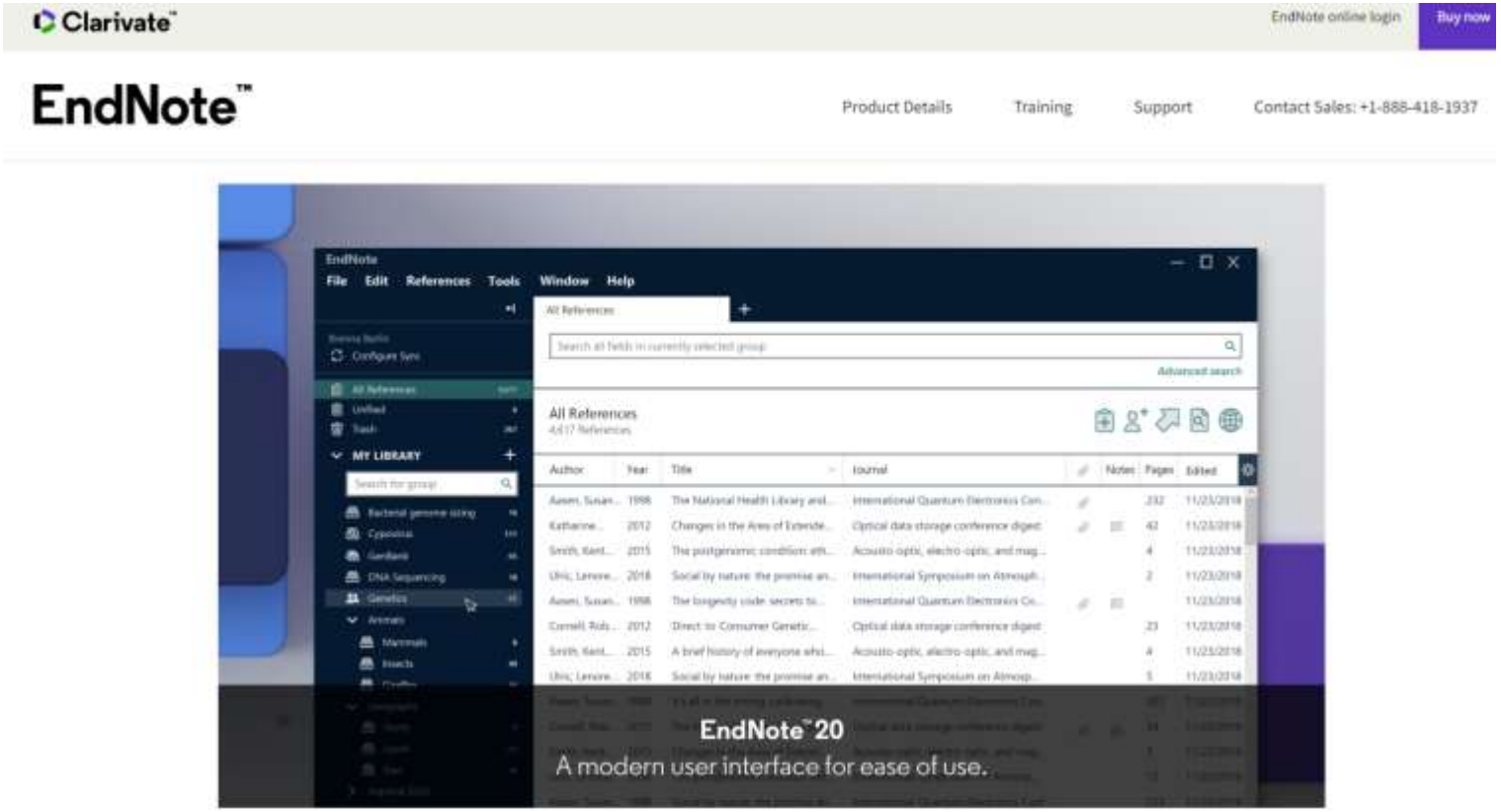
三、文献检索

➢ 学会整理文献

2019-Sparse_Robust_Principal_Component_Analysis_with_Applications_to.pdf	2021/12/20 8:32	Adobe Acrobat ...	3,575 KB
2019-Structured_Joint_Sparse_Principal_Component_Analysis_for_Fault_Detecti...	2020/7/16 9:26	Adobe Acrobat ...	2,273 KB
2020-Domain-Transformable_Sparse_Representation_for_Anomaly_Detection_i...	2021/12/30 11:04	Adobe Acrobat ...	3,902 KB
2020-Fast_and_Latent_Low-Rank_Subspace_Clustering_for_Hyperspectral_Ban...	2021/12/21 9:36	Adobe Acrobat ...	4,487 KB
2020-Hyperspectral_Anomaly_Detection_Based_on_Low-Rank_Representation_...	2021/12/20 20:25	Adobe Acrobat ...	3,435 KB
2020-Learning_Latent_Low-Rank_and_Sparse_Embedding_for_Robust_Image_F...	2021/12/21 9:28	Adobe Acrobat ...	3,513 KB
2020-Low-Rank_Transfer_Learning_for_Multi-stream_Data_Classification.pdf	2021/12/30 8:58	Adobe Acrobat ...	2,843 KB
2021-A_Novel_Multimanifold_Joint_Projections_Model_for_Multimode_Process...	2021/12/20 8:36	Adobe Acrobat ...	1,710 KB
2021-Ensemble_Joint_Sparse_Low-Rank_Matrix_Decomposition_for_Thermogr...	2021/12/21 9:27	Adobe Acrobat ...	4,277 KB
2021-Low-Rank_Characteristic_and_Temporal_Correlation_Analytics_for_Incipie...	2021/12/20 20:43	Adobe Acrobat ...	1,614 KB
2021-Low-Rank_Joint_Embedding_and_Its_Application_for_Robust_Process_M...	2021/11/26 8:26	Adobe Acrobat ...	8,880 KB
2021-Multiview_Subspace_Clustering_Using_Low-Rank_Representation.pdf	2021/12/30 8:34	Adobe Acrobat ...	12,255 KB
2021-Process_Monitoring_Using_a_Novel_Robust_PCA_Scheme.pdf	2021/12/20 8:36	Adobe Acrobat ...	993 KB
2021-Robust_Low-Rank_Matrix_Completion_via_an_Alternating_Manifold_Proxi...	2021/12/20 20:33	Adobe Acrobat ...	5,860 KB
2021-Spatial-Spectral_Structured_Sparse_Low-Rank_Representation_for_Hyper...	2021/12/30 8:35	Adobe Acrobat ...	8,566 KB
2021-Spectral-Difference_Low-Rank_Representation_Learning_for_Hyperspect...	2021/12/30 8:43	Adobe Acrobat ...	3,767 KB
2021-Superpixel-Guided_Discriminative_Low-Rank_Representation_of_Hypers...	2021/12/30 8:30	Adobe Acrobat ...	6,212 KB
2021-Tripartite_Graph_Regularized_Latent_Low-rank_Representation_for_Fashi...	2021/12/30 8:24	Adobe Acrobat ...	2,333 KB

三、文献检索

➢ 学会整理文献



Q & A