



基于ProQuest学术资源， 借助“检索增强生成”推动学习与研究

王剑飞 科睿唯安客户成功经理 | 2025年

培训内容

本讲座包含的主要内容：

1. 学术研究中AIGC存在的问题
2. ProQuest提供全球正版的学术内容
3. PQRA赋能文献的解读和挖掘学术内容
4. ProQuest的主要检索路径和技术
5. AIGC助力大文献量初筛与文献深读
6. 获取更多服务的渠道



学术研究中AIGC存在的问题

1-1 举例：“federated learning” 发展进程

AIGC提问：federated learning 课题的发展进程，并罗列所对应的重要研究文献？

理解问题基于两个搜索来源：CSDN博客

搜索网页

federated learning 课题的发展进程，并罗列所对应的重要研究文献？

找到 2 个搜索来源

多模态联邦学习(Federated Learning for Multimodal...
CSDN博客1

综述|联邦持续学习最新研究进展-CSDN博客
CSDN博客2

多模态联邦学习 (Federated Learning for Multimodal Data)
原创 朋也透william 于 2024-12-08 22:44:01 发布 阅读量1.2k 收藏 23 点赞数 20 文章标签: 深度学习 版权

综述 | 联邦持续学习最新研究进展
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举例：“federated learning” 发展进程

AIGC提问：federated learning 课题的发展进程，并罗列所对应的重要研究文献？

概念提出与初步探索阶段（2016-2017 年）

•

进程：2016 年，联邦学习由谷歌提出，旨在解决安卓手机用户数据隐私保护下的模型训练问题。

•重要研究文献

- 《Communication-Efficient Learning of Deep Networks from Decentralized Data》：首次提出联邦学习概念和联邦平均算法（FedAvg）。
- 《Federated Optimization: Distributed Machine Learning for On-Device Intelligence》：进一步阐述了联邦优化的相关内容。
- 《Federated Learning: Collaborative Machine Learning Without Centralized Training Data》：详细解释了联邦学习技术的细节。

技术发展完善阶段（2018-2019 年）

•

进程：学术界和工业界广泛关注，聚焦算法优化、隐私保护增强、系统架构设计等，出现多种改进算法和开源框架（1）。

•重要研究文献

- 《Advances and Open Problems in Federated Learning》：全面综述联邦学习在多方面的进展与挑战。
- 《Federated Learning with Differential Privacy》：探索差分隐私在联邦学习中的应用（1）。
- 《Communication-Efficient Decentralized Training on Heterogeneous Unreliable Devices》：研究在异构不可靠设备上的通信高效去中心化训练。
-

追溯早期研究

AIGC举例: 《Communication-Efficient Learning of Deep Networks from Decentralized Data》: 首次提出联邦学习概念和联邦平均算法 (FedAvg)

Web of Science™
Search Advanced search Research Assistant

arXiv > cs > arXiv:1602.05629v1

Computer Science > Machine Learning

[Submitted on 17 Feb 2016 (this version) latest version 26 Jan 2023 (v4)]

Federated Learning of Deep Networks using Model Averaging

H. Brendan McMahan, Eider Moore, Daniel Ramage, Blaise Agüera y Arcas

+ Add Keywords

arXiv > cs > arXiv:1602.05629v4

Computer Science > Machine Learning

[Submitted on 17 Feb 2016 (v1) last revised 26 Jan 2023 (this version, v4)]

Communication-Efficient Learning of Deep Networks from Decentralized Data

H. Brendan McMahan, Eider Moore, Daniel Ramage, Seth Hampson, Blaise Agüera y Arcas

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1 Federated Learning of Deep Networks using Model Averaging [arXiv]

McMahan, H.B.; Moore, E.; (...); Arcas, B.A.

17 Feb. 2016 | arXiv , pp.11 pp.

Modern mobile devices have access to a wealth of data suitable for learning models, which in turn can greatly improve the user experience...



0 References

谷歌研究科学家 Brendan McMahan（布兰登·麦克马汉）等：基于模型平均的深度网络联邦学习，于2016年首次提出联邦学习

1-2 举例：特定问题

多伦多大学Baochun Li教授指导学生完成的博硕论文有哪些？

根据目前的搜索结果，**没有直接列出**多伦多大学Baochun Li教授所有学生的博硕论文信息。不过，可以提供一些与Baochun Li教授及其学生相关的研究方向和部分重要论文的线索：

Baochun Li教授的研究方向包括云计算、分布式系统（如分布式机器学习和联邦学习）、安全与隐私以及网络。他发表了大量的研究论文，根据Google Scholar的统计，截至2025年1月，他已发表超过480篇研究论文，总引用次数超过27000次。

如果需要更详细的学生博硕论文列表，**建议访问多伦多大学电气与计算机工程系的官方网站**，或者查看Baochun Li教授的个人主页。此外，ResearchGate上也列出了他的一些研究工作

搜索网页

Baochun Li 多伦多大学 博硕论文

Baochun Li 多伦多大学 学生 论文

Baochun Li 多伦多大学 学术资源

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Baochun Li - iQua ece.toronto.edu

Acute cellulitis and erysipelas in adults: Treatment - UpToDate UpToDate [2024-12-12]

Baochun Li - dblp dblp

Computer Engineering Group · University of Toronto toronto.edu [2024-09-30]

R⁶ Baochun Li's research works | University of Toronto, Toronto ... ResearchGate

R⁶ Baochun Li's research works | University of Toronto, Toronto ... ResearchGate

论 Li, Baochun_Li, Baochun简介_Li, Baochun论文-论论 lunlunapp.com

Li, Baochun Professor - Electrical & Computer ... ece.utoronto.ca

Baochun Li Publications - University of Toronto utoronto.ca

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出版日期

多伦多大学Baochun Li教授指导学生完成的博硕论文34篇

1

Accelerating Internet Scale Distributed Machine Learning

Gu, Cheng. University of Toronto (Canada) ProQuest Dissertations & Theses, 2024. 31298554.

摘要/索引

预览 - PDF 格式 (320 KB)

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2

Performance-Centric Bandwidth Allocation for Data Parallel Applications in Private Datacenters

Chen, Li. University of Toronto (Canada) ProQuest Dissertations & Theses, 2015. 10158347.

摘要/索引

预览 - PDF 格式 (547 KB)

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1-3 学术研究过程中AIGC生成存在的主要问题？

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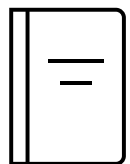
伦理

- 学术抄袭
- 传播错误信息
- 数据偏见

依耐性

- 影响独立思考
- 影响研究能力

学术文献AIGC生成的重要因素



数据

(学术、版权等)



模型

(算力、算法等)



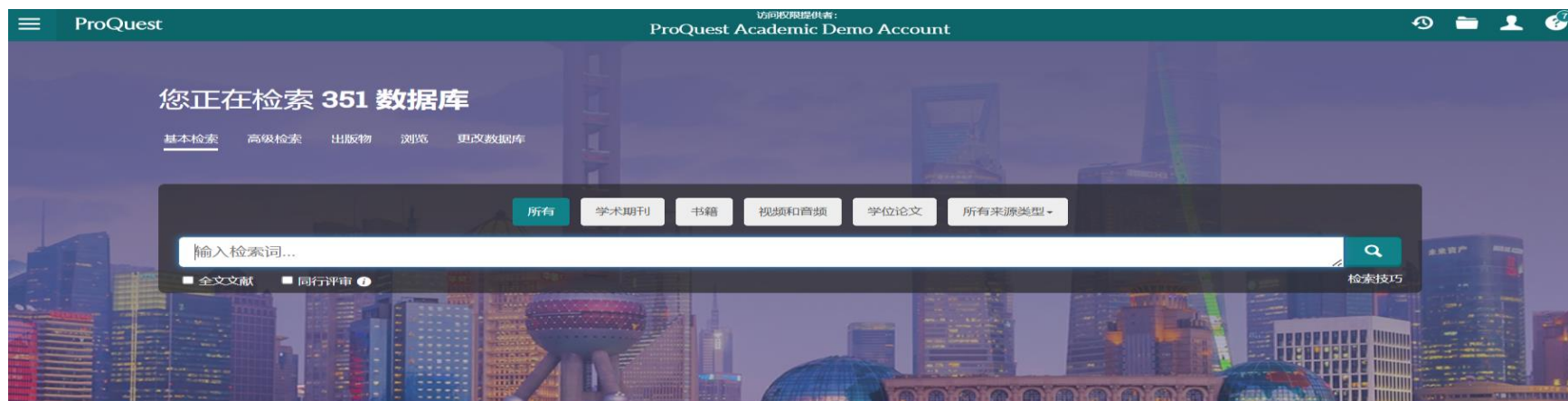
结果

(客观、科学等)



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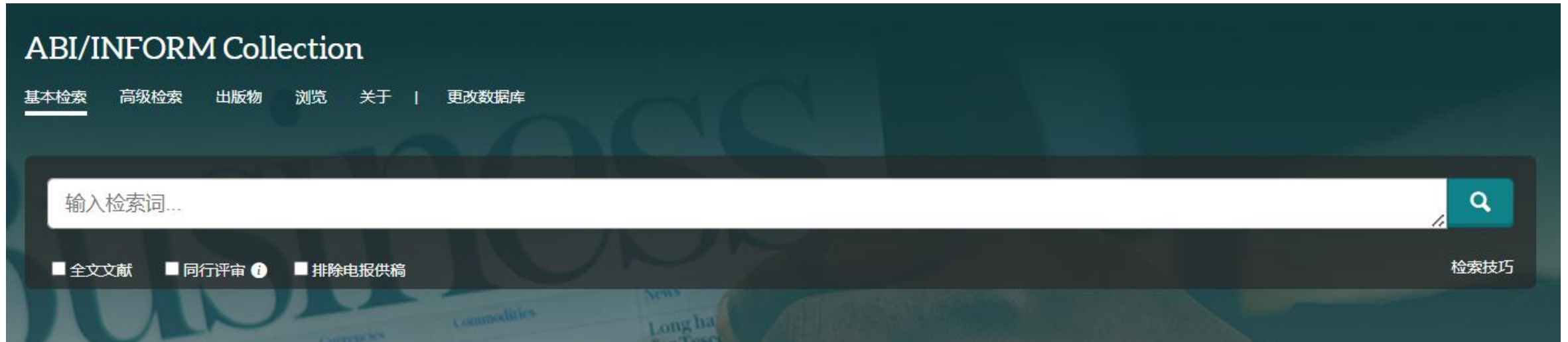
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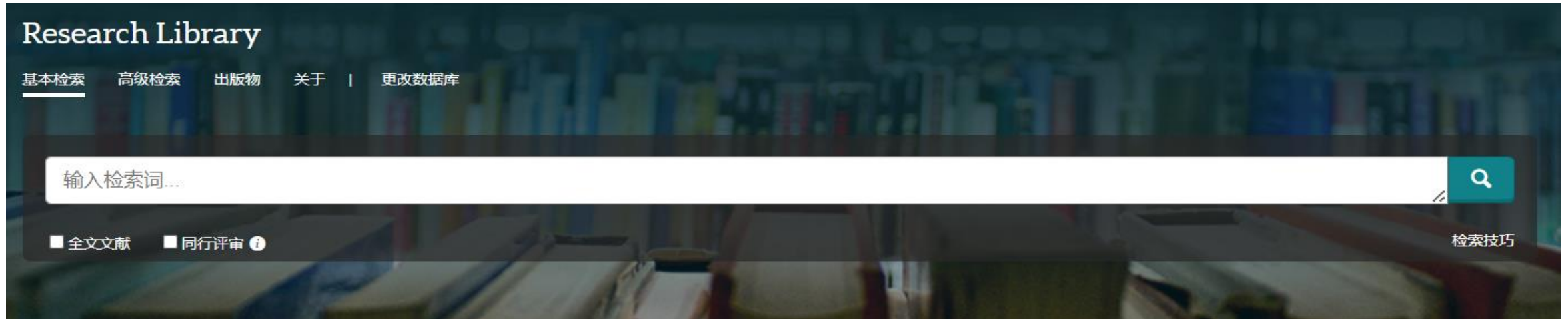
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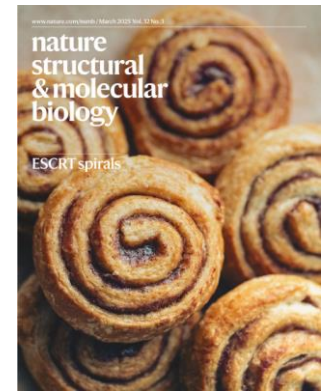
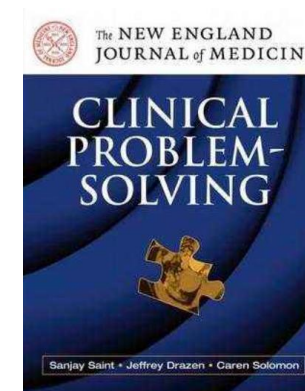
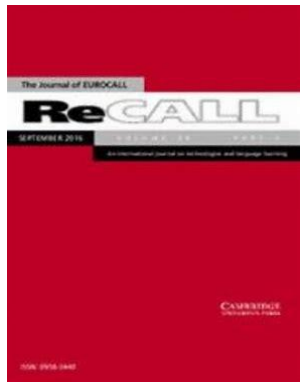
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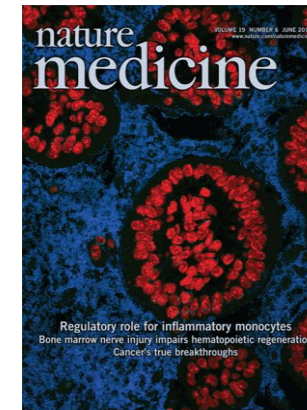
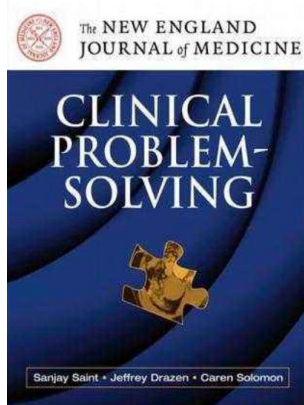
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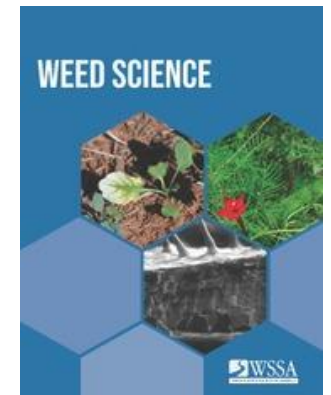
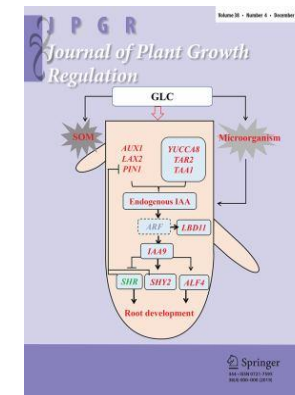
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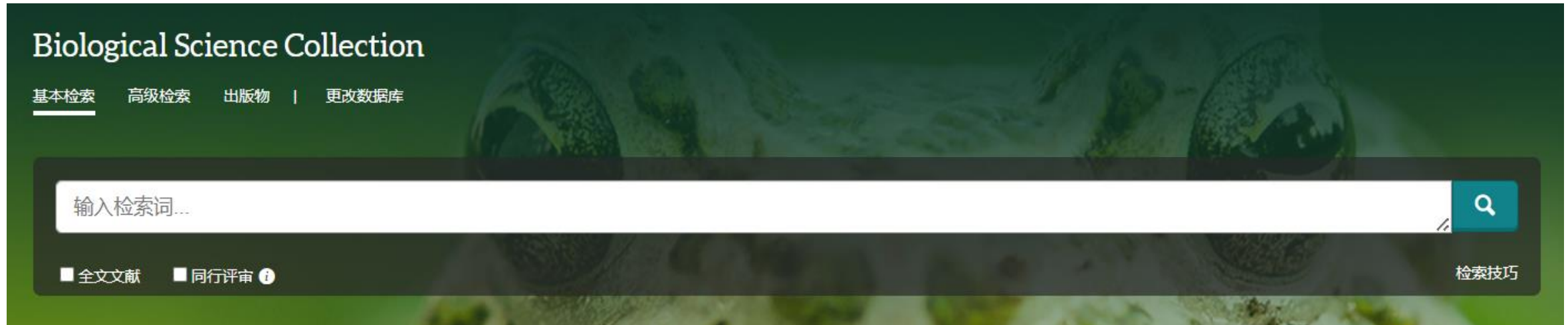
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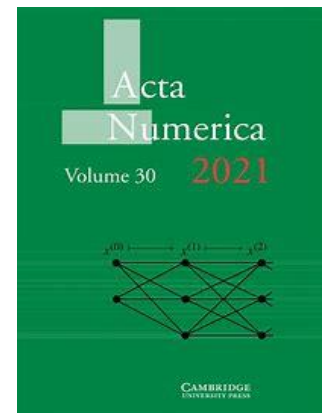
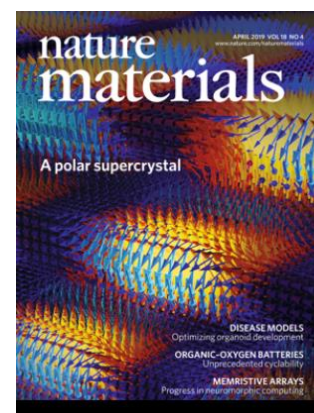
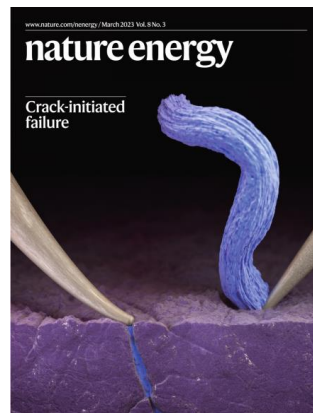
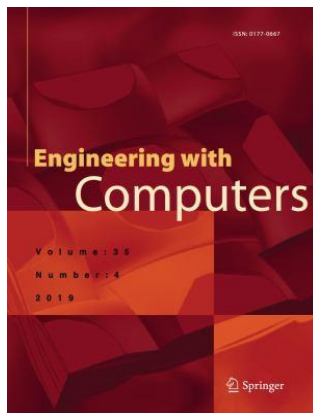
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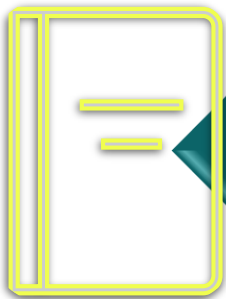
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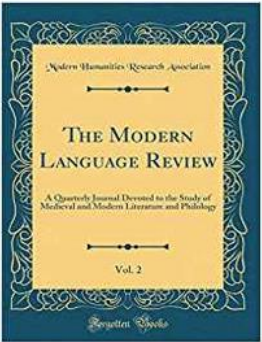
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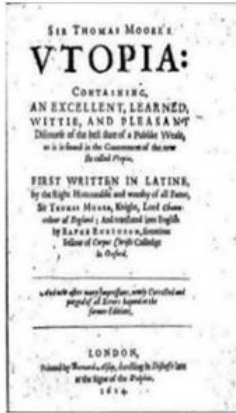


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哲学 - 托马斯·莫尔

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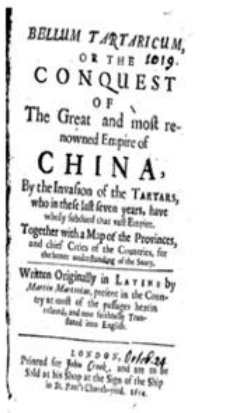


政治 - 尼古拉斯·马基雅维里的《君主论》

Nicholas Machiavelli's Prince - by Machiavelli, Niccolò, 1469-1527. London: Printed by R. Bishop, for Wil. Hills, and are to be sold by Daniel Pakeman at the signe of the Rainebow neare the Inner Temple gate, 1640

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汉学研究 - 卫匡国的《鞑靼战纪》

Bellum Tartaricum, or The conquest of the great and most renowned empire of China, by the invasion of the Tartars, who in these last seven years, have wholly subdued that vast empire. Together with a map of the provinces, and chief cities of the countries, for the better understanding of the story. 1654

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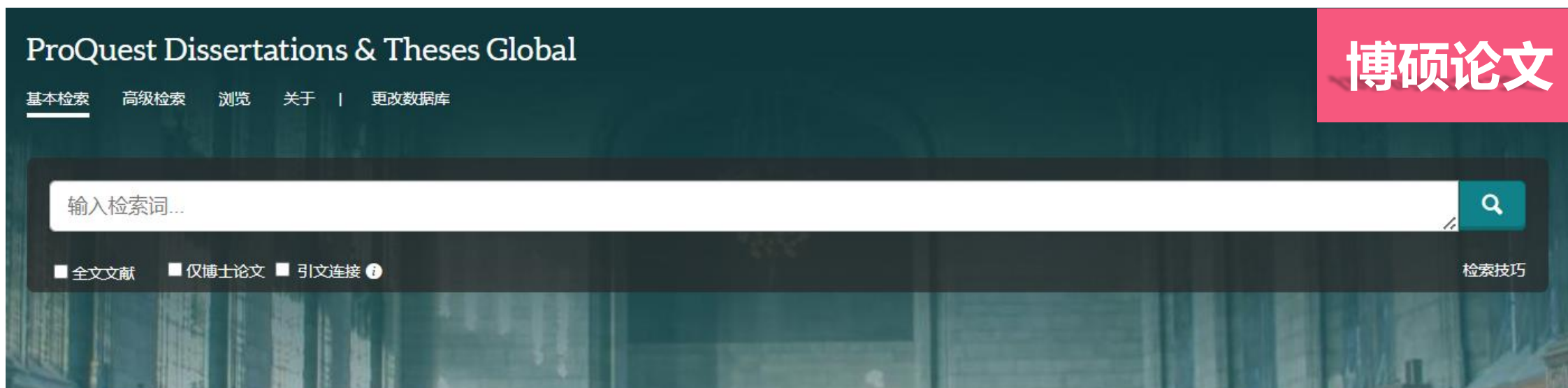
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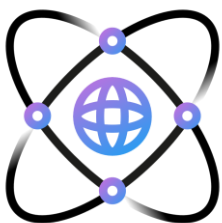
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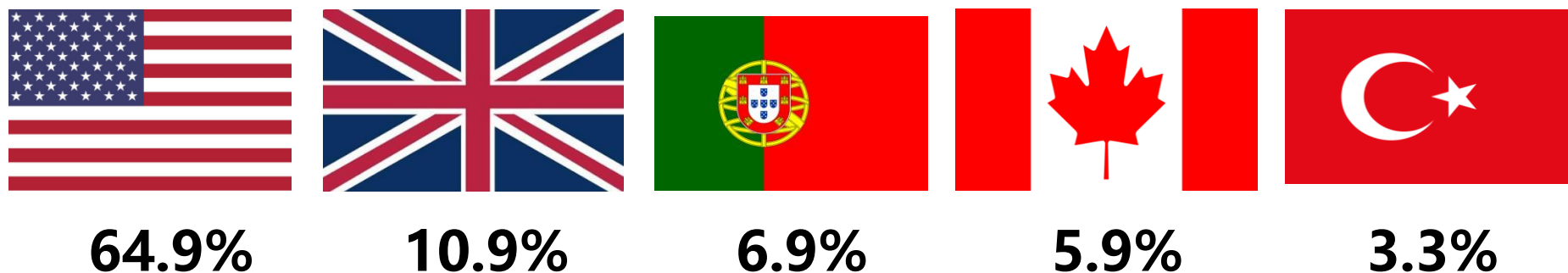
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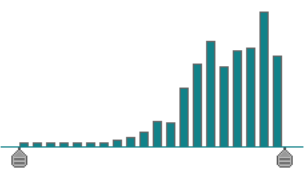
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知名研究人员的博士论文 – 诺奖获得者为例



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Lee, Tsung-Dao
1957诺贝尔物理学奖



Ting, Chao Chung
1976诺贝尔物理学奖



Steven Chu
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Tsui, Daniel Chee
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Drew Weissman
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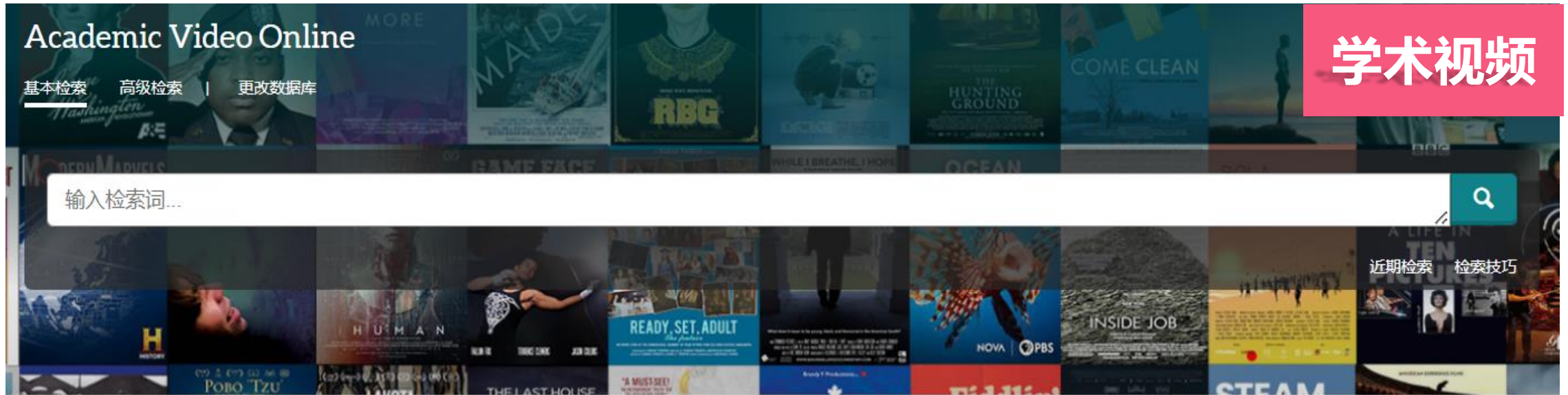


Bertozzi, Carolyn Ruth
2022诺贝尔生理学或医学奖



Diamond, Douglas Warren
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2-2-3 PQ1A - Alexander Street



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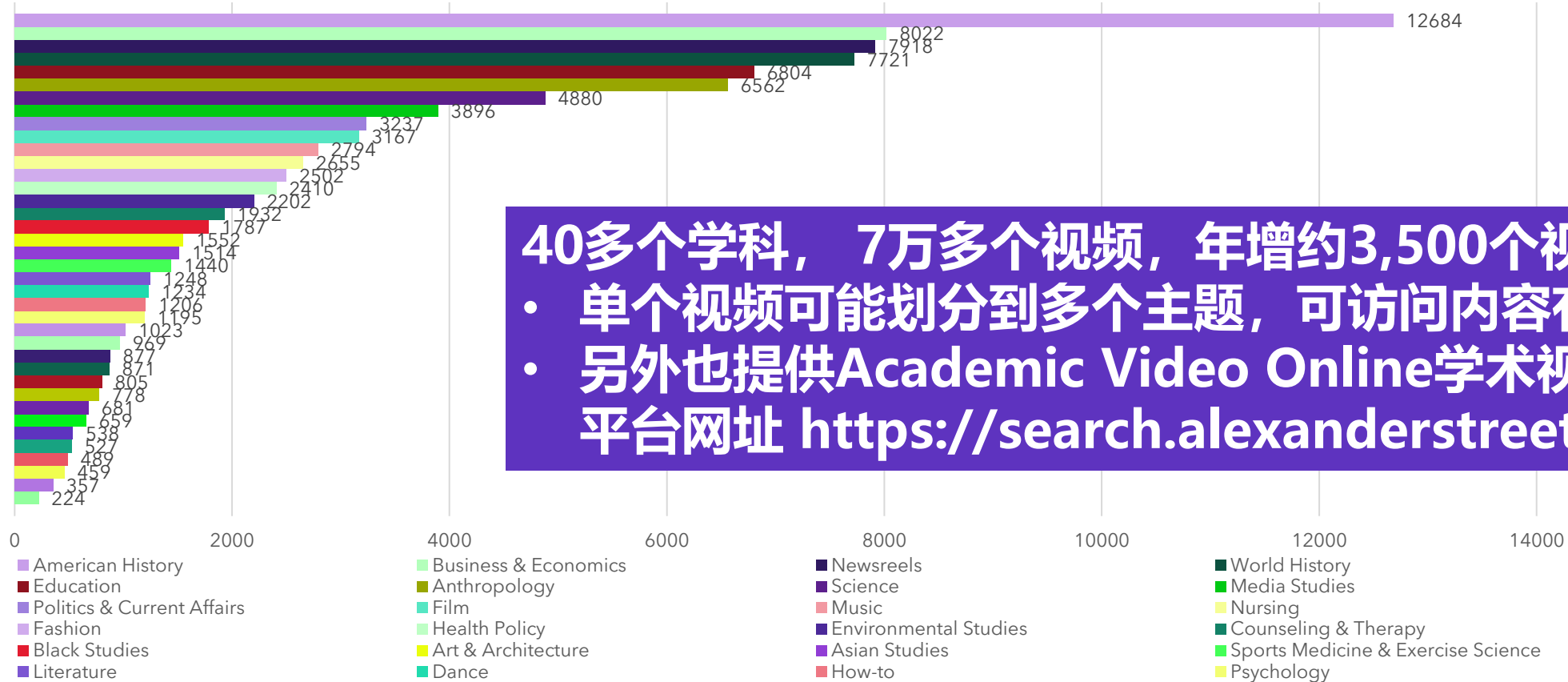
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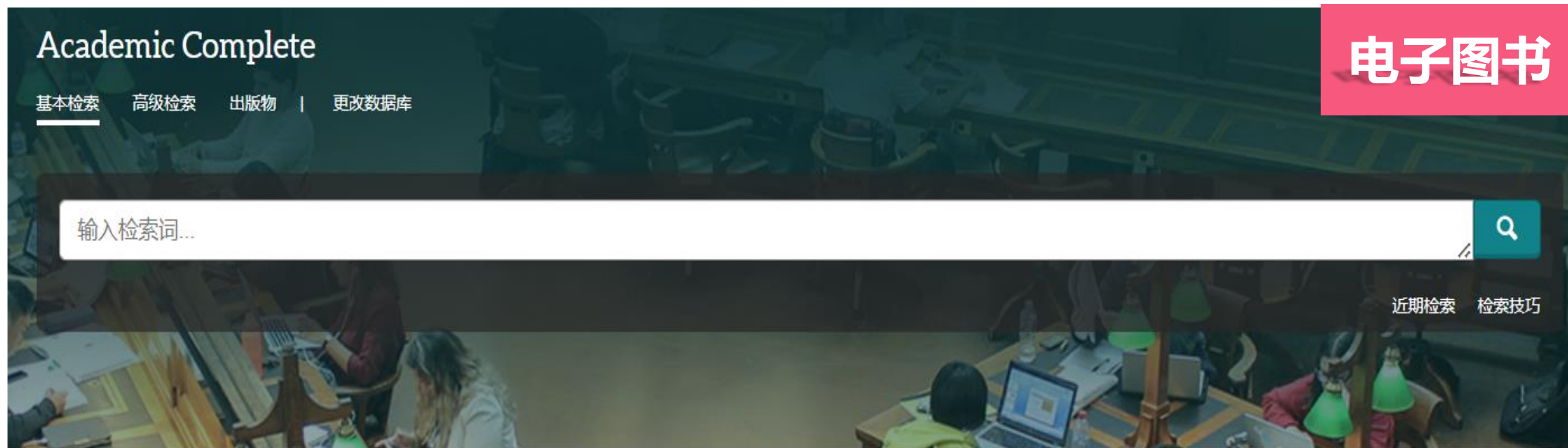
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2-2-4 PQ1A - Ebook Central AC



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2-2-5 ProQuest平台CALIS组团库



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2-3 O'Reilly for Higher Education

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What Is Generative AI? (Audio)

ChatGPT, Midjourney, Stable Diffusion, and LLaMA are quickly becoming household names. These tools and many more are categorized as generative AI, a distinct

By Kyle Stratis

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Building AI Agents with LLMs: Harnessing the Power of Generative AI with Autonomous Agents

The development and release of ChatGPT and other state-of-the-art large language models (LLMs) has renewed interest in the concept of AI agents, a term

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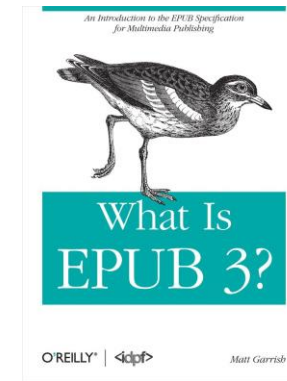
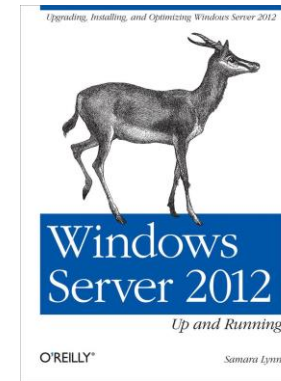
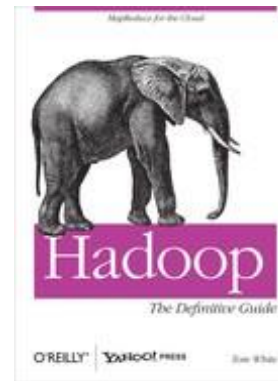
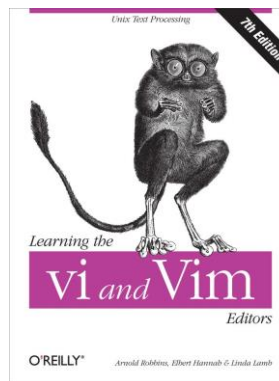
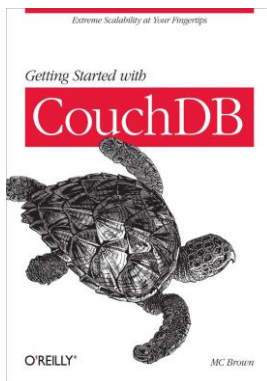
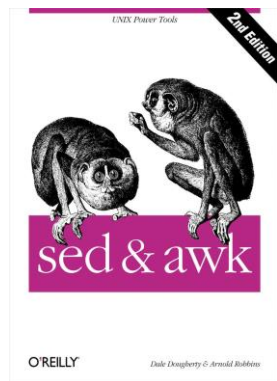
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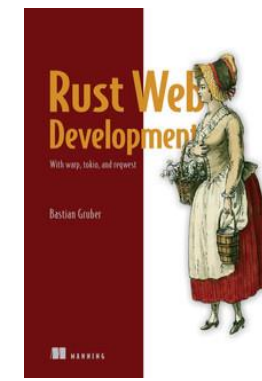
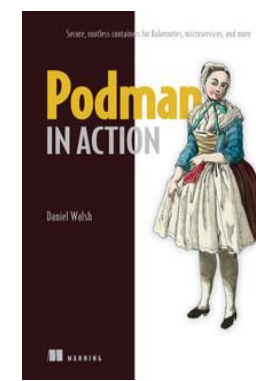
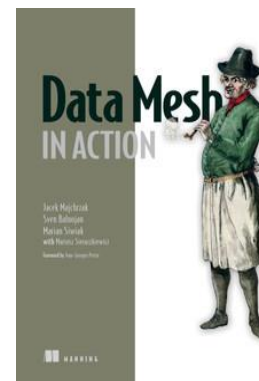
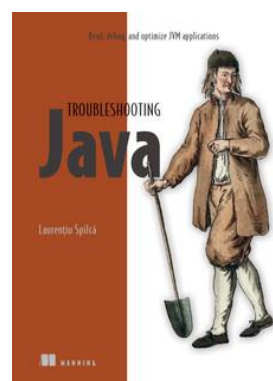
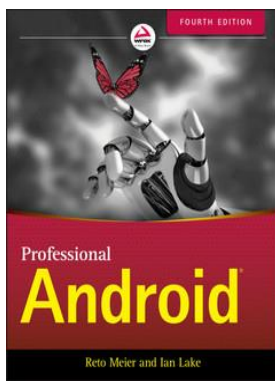
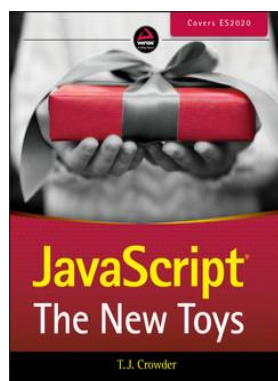
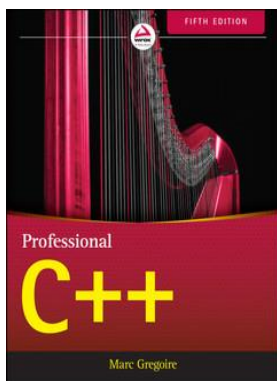
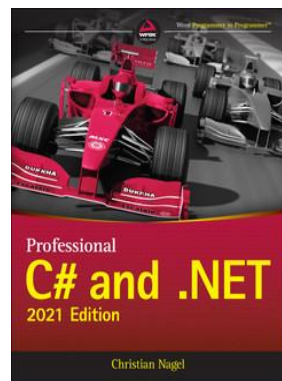


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★★★★☆ 11 600 pages
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Data is at the center of many challenges in system design today. Difficult issues such as scalability, consistency, reliability, efficiency, and maintainability need to be resolved. In addition, there's an overwhelming variety of tools and analytical systems, including relational databases, NoSQL datastores, plus data warehouses and data lakes. What are the right choices for your application? How do you make sense of all these buzzwords?...

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Building Applications with AI Agents

By [Michael Albada](#)

★★★★☆ 2 300 pages
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Generative AI has revolutionized how organizations tackle problems, accelerating the journey from concept to prototype to solution. While these applications enhance efficiency, they often require extensive planning, drafting, and revising to complete complex tasks. By combining many of these actions, AI agents offer greater autonomy and efficiency, but understanding and deploying them remains a challenge for many organizations, especially as technology and...

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PQRA赋能文献的解读和挖掘学术内容

3-1 RAG的优势

Retrieval-Augmented Generation for Knowledge-Intensive NLP Tasks [arXiv]

By

Lewis, P.; Perez, E.; Piktus, A.; Petroni, F.; Karpukhin, V.; Goyal, N.; Kuttler, H.; Lewis, M.; Wen-tau Yih; Rocktaschel, T.; ...More



2020年5月，Meta(原Facebook) Lewis, Patrick 等在论文Retrieval-Augmented Generation for Knowledge-Intensive NLP Tasks（用于知识密集型自然语言处理任务的检索增强生成）中首次提出检索增强生成（RAG），探索了一种用于检索增强生成（RAG）模型的通用微调方法，该模型结合了预训练的参数和非参数内存来生成语言。

RAG的检索模块负责**从外部知识库中**检索与输入查询相关的文档，然后将这些文档作为上下文传递给生成模块，从而生成更准确、更丰富的文本。

RAG的局限性

RAG (Retrieval-Augmented Generation, 检索增强生成) 技术可以在一定程度上缓解AIGC (人工智能生成内容) 的生成幻觉和内容质量问题, 但并不能完全避免这些问题。以下是其局限性:

RAG的局限性

- 检索的准确性和召回率: RAG的检索过程可能面临精确性和召回率的平衡问题。如果检索到的信息不准确或不完整, 可能会导致生成内容仍然存在偏差。
- 信息融合的复杂性: 将检索到的信息与生成模型的输出进行有效融合是一个挑战。如果处理不当, 可能会导致生成内容的连贯性或一致性问题。
- 无法完全消除幻觉: 尽管RAG显著降低了幻觉的发生率, 但当**检索到的信息不准确或不足以支持生成任务时**, 模型仍可能产生看似合理但不准确的内容。

3-2 ProQuest Research Assistant(PQRA)

- 由图书馆和研究人员共同体组成的AI咨询委员会，直接获取反馈用于指导开发。
- 基于负责任且可信的大语言模型，目前是 GPT-4o mini，但随着新模型出现并经过内部测试，将更新采用模型
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检索增强生成RAG

大语言模型LLM

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3-2-1 PQRA - 解读关键要点

The screenshot displays the ProQuest One Academic interface. At the top, the search term 'federated learning' is entered. Below the search bar, the results show 8 documents out of 132 total. The selected document is 'Federated meta-learning for spatial-temporal prediction' by Li, Wenzhu; Wang, Shuang, published in 'Neural Computing & Applications' (Heidelberg) Vol. 34, Iss. 13, (Jul 2022): 10355-10374. DOI: 10.1007/s00521-021-06861-3.

The document preview shows the title 'Federated meta-learning for spatial-temporal prediction' and the journal information. A sidebar on the left provides additional information: 32 references, 15 citations (Web of Science), and 7 documents sharing the reference.

On the right, a 'Research Assistant' panel provides a summary of the document's key points. A red arrow points to the first point: 'We propose a novel federated meta learning model for spatial temporal prediction that effectively addresses the heterogeneity of urban spatial temporal data through personalized learning mechanisms and a global spatial temporal pattern graph.' A purple box highlights the additional topics discussed: 'Privacy protection in spatial temporal prediction - Meta learning methods in federated learning - Decentralized blockchain technology in federated learning'. A blue box highlights the relationship to search terms: 'The document is related to AI in the context of federated learning and meta learning methods for spatial temporal prediction.' A disclaimer states: 'AI-generated content: quality may vary. Check for accuracy. Disclaimer'. Below this, a suggestion for further reading is provided: 'When Fine-Tuning LLMs Meets Data Privacy: An Empirical Study of Federated Learning in LLM-Based'. At the bottom, a red arrow points to a button labeled 'What are the findings or conclusions?' and a button labeled '根据此文档集思广益研究主题.' with a '+1' icon.

“用于时空预测的联邦元学习”

(主要课题) 我们提出了一个用于空间时间预测的新型联邦元学习模型，该模型通过个性化学习机制和全局空间时间模式图，有效解决了城市空间时间数据的异质性问题。

(其他课题) 文档中还讨论了以下其他主题：空间时间预测中的隐私保护，联邦学习中的元学习方法，联邦学习中的去中心化区块链技术。

(文档与检索关系) 该文档与在联邦学习和元学习方法背景下的空间时间预测中的人工智能相关。

3-2-2 PQRA – 提炼发现与总结

ProQuest One Academic

federated learning

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Federated meta-learning for spatial-temporal prediction

Li, Wenzhu; Wang, Shuang. *Neural Computing & Applications*; Heidelberg Vol. 34, Iss. 13, (Jul 2022): 10355-10374. DOI:10.1007/s00521-021-06861-3

全文 - PDF 格式

摘要/索引

32 参考文献

15 引用次数
Web of Science

7 包含共享参考文献的文档

Neural Computing and Applications (2022) 34:10355–10374
https://doi.org/10.1007/s00521-021-06861-3

S. I. : EFFECTIVE AND EFFICIENT DEEP LEARNING

Federated meta-learning for spatial-t

“用于时空预测的联邦元学习”

Research Assistant

What are the findings or conclusions?

Here are the findings or conclusions.

The document presents a novel approach to spatial temporal prediction in smart cities, focusing on privacy preservation through federated meta learning (FML ST). The primary goal is to develop accurate predictive models while addressing the growing concerns regarding data privacy in urban environments. The authors highlight the challenges posed by the non-independent and identically distributed (non-IID) nature of spatial temporal data, which complicates the application of traditional federated learning methods.

Key findings of the document include:

1. **Global Spatial Temporal Pattern Graph:** The authors propose the construction of a global

What are the findings or conclusions?

根据此文档集思广益研究主题。

该文档提出了一种智能城市中时空预测的新方法，专注于通过联邦元学习保护隐私。主要目标是在解决城市环境中日益增长的数据隐私问题的同时，开发准确的预测模型。作者强调了时空数据的非独立同分布特性所带来的挑战，这使得传统联邦学习方法的应用变得复杂。

文档的**关键发现**包括：

全球时空模式图：作者建议构建一个全球时空模式图，将来自不同客户端的本地学习模式进行整合。该图作为基础，使客户端能够根据全球和本地模式之间的差异定制其模型。

.....

总之，该文档通过创新的FML ST框架，在确保数据隐私的同时，成功应对了时空预测的挑战。所提出的模型不仅提高了预测精度，还适应了城市数据的独特特性，为智能城市管理领域做出了重要贡献。作者建议未来的研究可以探索将去中心化区块链技术整合进来，以进一步增强联邦学习系统的鲁棒性。

3-2-2 PQRA – 分析研究主题

ProQuest One Academic

federated learning

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Li, Wenzhu; Wang, Shuang. *Neural Computing & Applications*; Heidelberg Vol. 34, Iss. 13, (Jul 2022): 10355-10374. DOI:10.1007/s00521-021-06861-3

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7 包含共享参考文献的文档

Neural Computing and Applications (2022) 34:10355–10374
https://doi.org/10.1007/s00521-021-06861-3

S. I. : EFFECTIVE AND EFFICIENT DEEP LEARNING

Federated meta-learning for spatial-temp

“用于时空预测的联邦元学习”

Research Assistant

根据此文档集思广益研究主题。

以下是基于此文档的研究主题。

1. Federated learning for spatial temporal data:
This topic addresses the challenge of applying federated learning techniques to spatial temporal data, which is crucial for privacy-preserving data analysis across different cities.
2. Meta learning in federated environments:
Investigating the integration of meta learning with federated learning can enhance model personalization and performance, particularly in heterogeneous data settings.
3. Personalized learning mechanisms: This topic focuses on developing personalized learning strategies within federated learning frameworks to better accommodate individual client data characteristics.
4. Global spatial temporal pattern graphs:
Researching the construction and utilization of global spatial temporal pattern graphs can facilitate better understanding and prediction of

What are the findings or conclusions?

根据此文档集思广益研究主题。

Federated learning for spatial temporal data: This topic addresses the challenge of applying federated learning techniques to spatial temporal data, which is crucial for privacy-preserving data analysis across different cities.

联邦学习用于时空数据: 这个主题解决了在保护隐私的同时对时空数据进行模型训练的挑战, 这对于智慧城市应用至关重要。

每组主题由一个主要主题 + 更明确的子主题

主题基于文档生成。推荐潜在主题, 帮助用户拓展了解相关主题的知识, 激发选题灵感

3-2-3 PQRA - 拓展主题文献

Research Assistant

根据此文档集思广益研究主题。

以下是基于此文档的研究主题。

1. Federated learning for spatial temporal data: This topic addresses the challenge of applying federated learning techniques to spatial temporal data, which is crucial for privacy-preserving data analysis across different cities.
2. Meta learning in federated environments: Investigating the integration of meta learning with federated learning can enhance model personalization and performance, particularly in heterogeneous data settings.
3. Personalized learning mechanisms: This topic focuses on developing personalized learning strategies within federated learning frameworks to better accommodate individual client data characteristics.
4. Global spatial temporal pattern graphs: Researching the construction and utilization of global spatial temporal pattern graphs can facilitate better understanding and prediction of

What are the findings or conclusions?

根据此文档集思广益研究主题。

ProQuest One Academic

("federated learning" AND ("spatial data" OR "temporal data" OR "privacy" OR "data analysis"))

24,512 个检索结果

排序条件: 相关性

限定条件: ☐ 全文文献

出版物类型: 学术期刊 (10,838), 学位论文 (2,333), 报纸 (244), 杂志 (144), 行业杂志 (217), 更多 >

出版日期

1 In-depth Analysis of Privacy Threats in Federated Learning for Medical Data
Das, Badhan Chandra; M Hadi Amini; Wu, Yanzhao. arXiv.org; Ithaca, Sep 27, 2024.
...privacy risk analysis and mitigation in federated learning for medical data...
...empirical analysis, we demonstrate the severe privacy risks in federated...
...be effective in protecting medical images against privacy attacks in federated...
摘要/索引 获取全文文献

2 Advanced Privacy-Preserving Decentralized Federated Learning for Insider Threat Detection in Collaborative Healthcare Institutions
Newman, King David D. The George Washington University ProQuest Dissertations & Theses, 2025. 31639476.
...federated learning communication architecture, this approach ensures privacy...
...federated learning with differential privacy mechanism. This mechanism has been...
...Additionally, federated learning complies with laws and regulations, ensuring...
摘要/索引 预览 - PDF 格式 (2 MB) 全文 - PDF 格式 (6 MB) 220 参考文献

This topic addresses the challenge of applying **federated learning** techniques to **spatial temporal data**, which is crucial for **privacy-preserving data analysis** across different cities.

“用于时空预测的联邦元学习”

3-2-4 PQRA - 解释文中概念

ProQuest One Academic

federated learning

< 返回检索结果页 < 8 篇文档, 共 132 篇 > 全文文献 | 学术期刊

Federated meta-learning for spatial-temporal prediction

Li, Wenzhu; Wang, Shuang. *Neural Computing & Applications*; Heidelberg Vol. 34, Iss. 13, (Jul 2022): 10355-10374. DOI:10.1007/s00521-021-06861-3

全文 - PDF 格式

摘要/索引

32 参考文献

15 引用次数
Web of Science

7 包含共享参考文献的文档

Neural Computing and Applications (2022) 34:10355–10374
https://doi.org/10.1007/s00521-021-06861-3

S. I. : EFFECTIVE AND EFFICIENT DEEP LEARNING

Federated meta-learning for spatial-temp

“用于时空预测的联邦元学习”

Research Assistant

在此文档中描述重要概念。

以下是此文档中讨论的重要概念及其重要性。

- Federated Learning:** Federated Learning is a decentralized machine learning approach that allows multiple clients to collaboratively train a model while keeping their data local, thus preserving privacy. Its significance in the document lies in addressing the challenges of data heterogeneity in urban spatial-temporal prediction tasks.
- Meta Learning:** Meta Learning refers to the process of learning how to learn, enabling models to adapt quickly to new tasks with minimal data. In the document, it is crucial for enhancing the performance of personalized models in a federated learning environment.
- Spatial Temporal Prediction:** Spatial Temporal Prediction involves forecasting future values based on historical data that has both spatial and temporal dimensions, which is essential for applications like traffic flow and environmental monitoring. The document emphasizes its importance in smart city management and the challenges posed by data heterogeneity.

What are the findings or conclusions?

根据此文档集思广益研究主题。

联邦学习：联邦学习是一种去中心化的机器学习方法，它允许多个客户端在保持数据本地化的同时协作训练模型，从而保护隐私。**其在文档中的重要性**在于解决城市时空预测任务中的数据异质性问题。

重要概念及其解释基于文档语境中提取出来。不只是术语的定义，它们还包含了该术语与文档相关性的解释

PQRA - 发现概念文献

Research Assistant BETA

根据此文档集思广益研究主题。

在此文档中描述重要概念。

以下是此文档中讨论的重要概念及其重要性。

1. **Federated Learning:** Federated Learning is a decentralized machine learning approach that allows multiple clients to collaboratively train a model while keeping their data local, thus preserving privacy. Its significance in the document lies in addressing the challenges of data heterogeneity in urban spatial-temporal prediction tasks.

2. **Meta Learning:** Meta Learning refers to the process of learning how to learn, enabling models to adapt quickly to new tasks with minimal data. In the document, it is crucial for enhancing the performance of personalized models in a federated learning environment.

3. **Spatial Temporal Prediction:** Spatial Temporal Prediction involves forecasting future values based on historical data that has both spatial and temporal dimensions, which is essential for applications like traffic flow and environmental monitoring. The document emphasizes its importance in smart city management and the challenges posed by data privacy.

4. **Personalized Learning Mechanism:** The Personalized

ProQuest One Academic

"federated learning"

Distributed artificial intelligence

Distributed learning

Stochastic gradient descent

Internet of vehicles

Knowledge distillation

Content de

37,271 个检索结果

修改检索 近期检索 保存检索/提醒

排序条件

相关性

限定条件

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☐ 同行评审

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学位论文 (2,594)

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☐ 1

学位论文

Advanced Privacy-Preserving Decentralized Federated Learning for Insider Threat Detection in Collaborative Healthcare Institutions

Newman, King David D. The George Washington University ProQuest Dissertations & Theses, 2025. 31639476.

...the centralized federated learning (CFL) method offers improvements through a...
...Federated Learning (APDFL) system as a solution for insider threat detection...
...federated learning communication architecture, this approach ensures privacy,...

摘要/索引

预览 - PDF 格式 (2 MB)

全文 - PDF 格式 (6 MB)

220 参考文献

☐ 2

工作论文

Differentially Private Federated Learning: A Systematic Review

Fu, Jie; Yuan, Hong; Ling, Xinpeng; Wang, Leixia; Ran, Xun; 等. arXiv.org; Ithaca, May 20, 2024.

...promoted trusted federated learning to the forefront of research. Differential...
...as the de facto standard for privacy protection in federated learning due to its...
...privacy within federated learning, there remains an evident deficiency in...

摘要/索引

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3-2-5 PQRA – 人工智能主题词

ProQuest One Academic

"federated learning"

Q

✦ ⏪ ?

+ Distributed artificial intelligence

+ Distributed learning

+ Stochastic gradient descent

+ Internet of vehicles

+ Knowledge distillation

+ Content de

➡

37,271 个检索结果

修改检索

近期检索

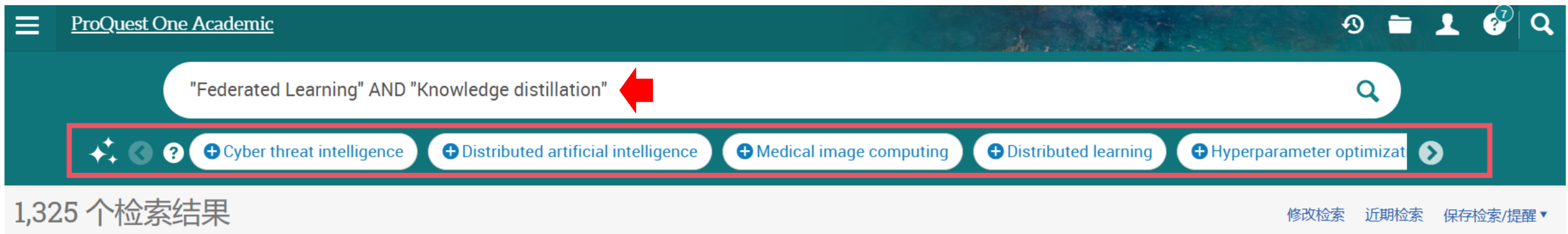
保存检索/提醒

相关主题：“Distributed artificial intelligence” “Distributed learning” “Stochastic gradient descent” “Internet of vehicles” “Knowledge distillation” “Content delivery network” “Homomorphic encryption” “Network intrusion” “分布式人工智能” “分布式学习” “随机梯度下降” “车联网” “知识蒸馏” “内容分发网络” “同态加密” “网络入侵”

推荐基于：ProQuest 的内容已被标注了属于科睿唯安基于人工智能的主题模型的特定术语，并结合术语在数据库中全局排名-包含检索词后术语的排名

Term	Global rank	Search rank	Final Score (global rank - search rank)
temperature	20	93	-73
anopheles	68	4	64

PQRA – 人工智能主题词



The screenshot shows the ProQuest One Academic interface. At the top, there is a search bar containing the query "Federated Learning" AND "Knowledge distillation". Below the search bar, a row of related terms is displayed, each in a blue button with a plus icon: "Cyber threat intelligence", "Distributed artificial intelligence", "Medical image computing", "Distributed learning", and "Hyperparameter optimization". A red box highlights this row of buttons. Below the buttons, the text "1,325 个检索结果" (1,325 search results) is visible. On the right side, there are links for "修改检索" (Modify search), "近期检索" (Recent searches), and "保存检索/提醒" (Save search/reminder).

"Cyber threat intelligence" AND "Distributed artificial intelligence" AND "Medical image computing" AND "Distributed learning" AND "Hyperparameter optimization" AND "Cyber threat" AND "Variational autoencoder" AND "Computation offloading"

“网络威胁情报” “分布式人工智能” “医学图像计算” “分布式学习” “超参数优化” “网络威胁” “变分自编码器” “计算卸载”

PQRA 相关说明

- **PQRA针对的哪些类型文献？**

学术期刊，行业杂志，杂志，新闻（包括当前、历史和有线推送），视频，博硕论文，会议论文集，百科全书/参考书，政府和官方出版物，报告，工作论文，标准和实践指南

请注意，150 字以下的文档和某些决定不参与的出版商不会显示这些功能。

- **PQRA针对的哪些类型文献？**

目前生成语种主要是英文

- **Research Assistant 使用哪些 LLM 模型？**

答：我们使用 Open AI LLM，目前是 GPT-4O mini，但具体版本会随着新模型的出现而变化，并已经过内部测试。

- **更多详情**，请访问 [ProQuest Research Assistant: FAQs](#)



ProQuest的主要检索路径和技术

4-1 ProQuest检索路径

The screenshot shows the ProQuest ABI/INFORM Collection homepage. At the top, it says 'ProQuest' and '访问权限提供者: ProQuest Non-Academic Demo Account'. The main navigation bar includes '基本检索' (Basic Search), '高级检索' (Advanced Search), '出版物' (Publications), '浏览' (Browse), '关于' (About), and '更改数据库' (Change Database). A search bar is on the right. Below the navigation bar, there's a section titled 'The most comprehensive ABI/INFORM database...' with a description and a link to 'here'. A sidebar on the right contains links like '想要了解更多内容?' (Want to know more?), '尝试下列选项之一:' (Try one of the following options:), and a list of links: '检索在线帮助' (Search online help), '在 ProQuest 产品支持中心搜索常见问题的答案' (Search for answers to common questions in the ProQuest product support center), and '联系客服支持' (Contact customer support). Annotations in Chinese are overlaid on the image: a blue box labeled '基本检索' points to the '基本检索' link; a yellow box labeled '高级检索 含命令行检索' points to the '高级检索' link; a purple box labeled '浏览 (非刊出版物)' points to the '浏览' link; a purple box labeled '获取出版物清单和出版物浏览与检索' points to the '出版物' link; and a purple box labeled '主题收录时间范围' points to the '这里' link in the text 'To see what's new in ABI/INFORM Collection click here'.

ProQuest 访问权限提供者: ProQuest Non-Academic Demo Account

ABI/INFORM Collection

基本检索 高级检索 出版物 浏览 关于 | 更改数据库

基本检索

高级检索
含命令行检索

浏览 (非刊出版物)

获取出版物清单和
出版物浏览与检索

主题收录时间范围

包含的数据库

The most comprehensive ABI/INFORM database, this comprises ABI/INFORM Global, ABI/INFORM Trade and Industry, and ABI/INFORM Dateline. The database features thousands of full-text journals, dissertations, working papers, key business and economics periodicals such as the Economist, country-and industry-focused reports, and downloadable data. Its international coverage gives researchers a complete picture of companies and business trends around the world.

To see what's new in ABI/INFORM Collection click [here](#).

- 更多信息
- 查看标题列表

想要了解更多内容?

尝试下列选项之一:

- 检索在线 帮助
- 在 ProQuest 产品支持中心搜索常见问题的答案。
- 联系客服支持 如果您需要进一步帮助。

4-2 高级检索页 - ABI (因库而异)

ABI/INFORM Collection

高级检索

命令行

近期检索

词库

字段代码

检索技巧

主题词库/字段代码/检索技巧

于

所有字段

AND

于

所有字段

+ 添加一行

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☐ 同行评审

☐ 排除电报供稿

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所有日期

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查找 公司/组织

NAICS 代码:

查找 NAICS 代码

分类代码:

查找 分类代码

地点:

查找 地点

人名:

查找 民族

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出版物类型:

☐ 全选

文档类型:

☐ 全选

语言:

☐ 全选

常用字段

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代码
公司
人名
主题词
全文等

说明: 各数据库词库、检索字段或存在差异, 常用字段和限制条件或存差异

资源中心
(含检索指南)

5 ?

清空检索表格

高级检索 - PQDT Global (因库而异)

ProQuest Dissertations & Theses Global

高级检索

命令行

字段代码

检索技巧

于

所有字段

AND

于

所有字段

添加一行

限定条件:

☐ 全文文献

出版日期:

所有日期

作者:

查找 作者

导师:

查找 导师

大学/单位:

查找 大学/单位

主题词 (全部):

查找 主题

索引短语 (关键字):

查找 索引短语 (关键字)

作者

导师

作者关键词

分类

主题

学校

部门

学位

全文等

5 ?

空检索表格

高级检索页 – 词库

词库列表

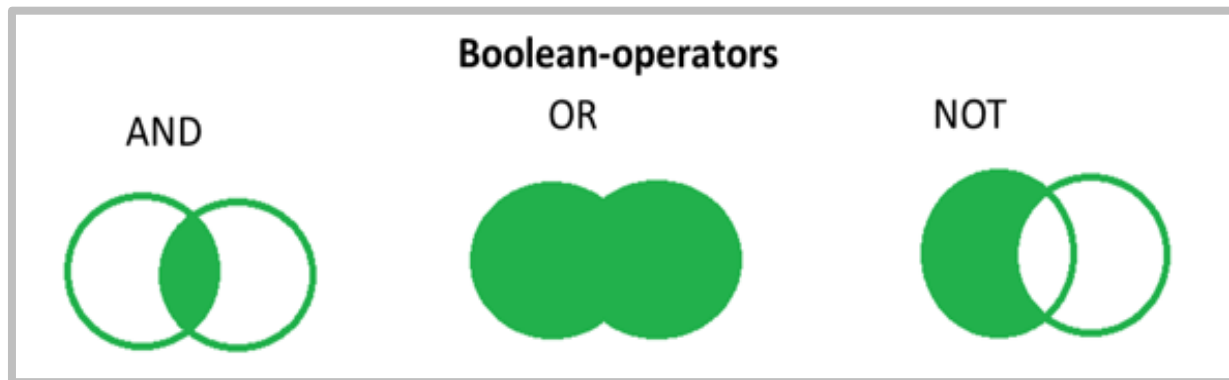
下列词库可用于您目前选中的数据库。注意: 许多词库都是特定数据库词库, 可能将您的检索结果限定于这些数据库中的文档。

- APA Thesaurus of Psychological Index Terms - Fall 2024
- Australian Education Index Thesaurus
- ComDisDome Thesaurus
- EconLit Thesaurus
- Environmental Science Thesaurus
- GeoRef Thesaurus
- HAPI Thesaurus
- Inspec 2023 Thesaurus
- International Pharmaceutical Abstracts Thesaurus
- Life Sciences Thesaurus
- Mediae Latinitatis Lexicon Minus
- MeSH 2024 Thesaurus
- ProQuest Thesaurus
- PTSDpubs Thesaurus
- Social Science Thesaurus
- Sociological Thesaurus
- Taxonomic Terms (Latin Names of Organisms Vocabulary)
- Technology Thesaurus

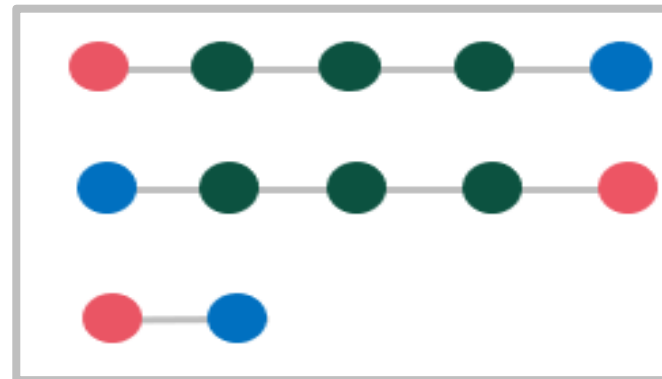
- 跨库检索将显示全部匹配主题词表
- 现刊类数据库多采用ProQuest Thesaurus
- 美国心理学会数据库采用APA Thesaurus of Psychological Index Terms
- MeSH主题词仅适用于包含了Medline的数据库

检索技巧

- 布尔算符AND, OR, NOT



- 位置算符NEAR, PRE, " "



- NEAR/n, 位置算符, 无排序
- PRE /n、位置算符, 排序
- " " 表示词组, 等同 – 连字符

- 通配符* 表示0-5个字符, [*N] 表示截词符在N个字符以内, ? 1个字符;
- 更多规则请访问 <https://proquest.libguides.com/proquestplatform/tips> ←

检索策略 – 检索词

"federated learning"的英文同义词有哪些?



“Federated learning”（联邦学习）是一个比较专业的术语，通常没有完全等价的同义词，但有一些相关的表达可以用来描述类似的概念或应用场景：

Distributed Learning（分布式学习）

虽然“distributed learning”更广泛地指在多个设备或节点上进行的学习，但它有时可以与“federated learning”互换使用，尤其是在强调设备间协作的场景中。

Collaborative Learning（协作学习）

这个词强调多个实体（如设备或用户）之间的合作来完成学习任务，与联邦学习的协作特性有一定关联。

Decentralized Learning（去中心化学习）

强调学习过程不依赖于中心服务器，与联邦学习的分布式架构有相似之处。

Edge Learning（边缘学习）

虽然“edge learning”更侧重于在边缘设备上进行学习，但它与联邦学习的分布式计算和隐私保护目标有重叠。

Privacy-Preserving Machine Learning（隐私保护机器学习）

这个术语更强调隐私保护，是联邦学习的一个重要特征，但范围更广。

Federated Machine Learning（联邦机器学习）

这是“federated learning”在机器学习领域的具体化表达，有时也被用作同义词。

Federate learning 可转换为 (Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning

高级检索

高级检索

命令行近期检索词库字段代码检索技巧

(Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning	于	文档标题 – TITLE
OR		
(Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning	于	所有主题和索引 – SUBJECT
OR		
(Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning	于	摘要 – ABSTRACT

+ 添加一行

- 删除一行

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☐ 同行评审 ⓘ

出版日期:

所有日期

检索

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地点: °

查找 地点

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☐ Topic Pages

文档类型:

☐ 全选

☐ Document Project

语言:

☐ 全选

☐ 阿尔巴尼亚语

4-3 检索结果页

ProQuest One Academic

Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning) on abstract((Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning)

Group learning

Distributed learning

Group work

Homomorphic encryption

Differential privacy

Cooperative learning

49,552 个检索结果

修改检索 近期检索 保存检索/提醒

AI推荐动态主题

排序条件

相关性

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出版物类型

出版日期

主题

文档类型

语言

出版物名称

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数据库

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1

Exploring the distributed learning on federated learning and cluster computing via convolutional neural networks

Chang, Jia-Wei; Hung, Jason C; Chu, Ting-Hong. Neural Computing & Applications; Heidelberg Vol. 36, Iss. 5, (Feb 2024): 2141-2153.

摘要/索引

全文 - PDF 格式 (1 MB)

Times cited

1 on Web of Science

41 参考文献

2

Personalized Federated Learning on Heterogeneous and Long-Tailed Data via Expert

; Zhang, Yiqun; Li, Mengke; 等. arXiv.org; Ithaca, Aug 4, 2024.

全文文献

3

Advanced Privacy-Preserving Decentralized Federated Learning for Insider Threat Detection in Collaborative Healthcare Institutions

Newman, King David D. The George Washington University ProQuest Dissertations & Theses, 2025. 31639476.

摘要/索引

预览 - PDF 格式 (2 MB)

全文 - PDF 格式 (6 MB)

220 参考文献

与您的检索匹配的书籍

Leading Collaborative Learning: Empowering Exce ...

Sharratt, Lyn D; Planche, Beate M. Thousand Oaks, US, ...

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4-4 组合检索

ProQuest One Academic

近期检索

要保存检索，选择操作菜单内的保存检索。[了解更多信息](#)

[S1] AND [S2]

检索

检索技巧

示例: [S1] AND ([S3] OR [S6])
([S1] AND [S3]) OR ([S1] AND [S2])
[S3] NOT treatment

组合检索

所选条目: 2 合并 AND OR 删除 保存 显示 所有详情 导出全部搜索

☒	集	检索	数据库	结果	保存检索/提醒	其他操作
☒	S2	title((Knowledge or Model) near/1 distillation) OR subject((Knowledge or Model) near/1 distillation) OR abstract((Knowledge or Model) near/1 distillation)	6 个数据库	8,118	保存检索/提醒	其他操作
☒	S1	title((Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning) OR subject((Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning) OR abstract((Federated or Distributed or Collaborative or Decentralized or Privacy-preserving) pre/1 learning)	6 个数据库	49,554	保存检索/提醒	其他操作

近期检索

检索结果页

ProQuest One Academic

[S1] AND [S2]

Q

Brain disease

Catastrophic interference

Distributed intelligence

Distributed artificial intelligence

Central nervous system disease

472 个检索结果

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排序条件

相关性

限定条件

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学位论文 (15)

会议论文及记录 (150)

研究手稿 (180)

选择 1-20

“ ”

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1

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工作论文

Towards Personalized Federated Learning via Comprehensive Knowledge Distillation

Wang, Pengju; Liu, Bochao; Guo, Weijia; Li, Yong; Ge, Shiming. [arXiv.org](#); [Ithaca](#), Nov 6, 2024.

摘要/索引

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全文献

2

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工作论文

Distributed Learning for Wi-Fi AP Load Prediction

Salami, Dariush; Wilhelmi, Francesc; Galati-Giordano, Lorenzo; Kasslin, Mika. [arXiv.org](#); [Ithaca](#), Apr 22, 2024.

摘要/索引

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全文献

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工作论文

Privacy-Preserving Federated Learning with Consistency via Knowledge Distillation Using Conditional Generator

Luo, Kanqiang; Wang, Shuai; Li, Xiang; Yunshi Lan; Gao, Ming; 等. [arXiv.org](#); [Ithaca](#), Sep 16, 2024.

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这 5 篇论文均围绕联邦学习展开，分别从处理极端标签噪声、结合知识蒸馏技术、解决个性化学习问题以及应对异构模型环境等方面进行研究，提出了相应的方法，并通过实验验证了这些方法在提升模型性能、保护隐私、处理数据异质性等方面的有效性。

1. 《Federated Learning for Extreme Label Noise: Enhanced Knowledge Distillation and Particle Swarm Optimization》：联邦学习在隐私保护和分布式模型训练方面有优势，但复杂环境下客户端的标签噪声会影响模型性能。研究发现高污染数据影响模型泛化和稳定性，重加权策略可提升性能。基于此提出 FedDPSO 方法，服务器动态识别噪声客户端，用优化算法确定模型权重，噪声客户端构建插值损失减轻标签噪声过拟合影响。实验表明，在最高噪声比下，FedDPSO 在 CIFAR10 数据集上比 FedAvg 平均准确率

5-3 文献深度 – 全文解读

Transfer_Learning_and_Optim...

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这篇博士论文主要研究大规模模型中的迁移学习和优化理论，旨在解决统计迁移学习和优化收敛方面的关键挑战，提出了新方法并给出理论保障，通过多种实验验证了方法的有效性。

1. **研究背景与问题：**随着机器学习在各领域的广泛应用，迁移学习和基于梯度的优化备受关注，但缺乏严格理论保证。本论文针对统计迁移学习和大规模机器学习模型优化收敛中的关键挑战展开研究，涵盖鲁棒迁移学习、深度神经网络迁移学习以及 Transformer 训练的全局收敛性等问题 ① ②。

2. **鲁棒迁移学习**

- 问题与方法：**研究在源数据不可靠情况下的二分类迁移学习，引入“歧义水平”衡量目标 χ^2 回归函数差异，提出 Transfer Around Boundary (TAB) 分类器。该分类器根据目标数据估计和源数据估计的歧义水平进行决策。

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increases, gradient-based training methods commonly succeed in achieving remarkably low training loss despite the highly non-convex landscape of the training objective function. It remains puzzling how these methods consistently work well, especially when training large-scale Transformer models.

While large-scale models such as neural networks and Transformers have demonstrated significant empirical success, there remains a lack of rigorous theoretical guarantees for a series of widely-used training practices such as transfer learning and the favorable optimization properties. Therefore, bridging the gap between practical success and theoretical foundations for these modern technologies is a critical challenge that requires the development of novel, robust methodologies. In response to this, my thesis introduces methods designed to address these challenges in a rigorous, theoretically grounded manner. Specifically, I investigate the problem of robust transfer learning in the presence of unreliable source data, transfer learning for deep ReLU neural networks in non-parametric regression, and global convergence guarantees for training Transformers using gradient flow. Each problem addresses the high-dimensional regime, employing large-scale models as solution methodologies. In the following sections of this chapter, I will outline the main contributions of this thesis.

AI 搜索 解释 翻译 复制

1.1 Transfer Learning with Statistical Robustness

Chapter 2 is based on a joint work Fan et al. (2023) with Jianqing Fan and Jason M. Klus

总结

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文献深度 - 提问解读

迁移学习在高维非参数回归场景下存在的挑战具体表现在哪些方面

在高维非参数回归场景下，迁移学习存在诸多挑战，主要集中在数据分布差异、模型复杂度和计算资源等方面。这些挑战影响着迁移学习的效果和应用，具体表现为：

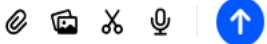
- 1. **数据分布差异带来的挑战：**在实际应用中，源数据和目标数据的分布往往存在差异，包括协变量 shift 和标签 shift（或后验 shift）。协变量 shift 指的是响应变量给定协变量的条件分布在源数据和目标数据中相同，但协变量的边际分布不同；标签 shift 则是目标和源的边际分布相同或相似，但条件概率不同。这些差异使得从源数据中学习到的知识难以直接应用于目标数据，增加了模型准确预测的难度。例如，在不同领域的数据中，特征的分布可能发生变化，导致基于源数据训练的模型在目标数据上效果不佳。而且现有研究中对标签 shift 的处理存在局限性，如一些方法依赖特定且难以测试的假设，在源数据存在多种歧义时效果不佳，无法有效利用源数据的信息来提升目标数据的学习效果^{①②}。
- 2. **高维性带来的挑战：**高维特征空间使得几乎所有非参数文献中的方法失效，这是由于维度诅咒导致在高维下难以保证模型的一致性。随着维度增加，数据变得稀疏，模型难以捕捉到数据中的规律，从而影响模型

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both Q and P .

2.1.1 Related Literature

Recent research has aimed to bridge the gap between limited theoretical understanding and significant practical achievements in transfer classification learning. To set up the problem, it is necessary to make some assumptions about the similarity between the target and source distributions, which are both useful for theory and practical implementation. Various approaches have been proposed and explored in the literature to measure this similarity, including divergence bounds, covariate shift, and label shift. Some methods focus on test error bounds that rely on measures of discrepancy between Q and P , such as modified total-variation or Rényi divergence, between the target and source distributions (Ben-David et al., 2010a,b; Mansour et al., 2009a,b; Germain et al., 2013; Cortes et al., 2019). This line of work produces distribution-free risk rates, primarily expressed in terms of n_P alone, but the obtained rates do not converge to zero with increasing sample size. In other words, these frameworks cannot produce a faster convergence of excess risk if their proposed divergences are non-negligible. Nonetheless, consistent classification is proved achievable regardless of a non-negligible divergence even when $n_Q = 0$, provided that certain additional structures on the target and source distributions are present (Ben-David et al., 2010b).

Two common additional structures include covariate shift and label shift (or posterior shift). Covariate shift (Gretton et al., 2008; Quionero-Candela et al., 2009; Kpotufe and Martinet, 2018) considers scenarios where the conditional distributions of the response given



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