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Research Review

Literature Review
‣ Written summary and evaluation of what is known about a topic
‣ Iterative process commonly used for bibliographies

Scoping Review
‣ Preliminary assessment of the size and scope of available literature
‣ Map existing evidence w/out synthesizing findings

Systematic Review
‣ Analyze and synthesize many studies, well-documented and unbiased
‣ Reproducible methodology, assesses the validity of the findings

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- IEEE Xplore 📍 ⧉
  The IEEE Xplore digital library is a powerful resource for discovery of scientific and technical content published by the IEEE (Institute of Electrical and Electronics Engineers) and its publishing partners.

- Compendex ⧉ 📍 ⧉
  Compendex is the most comprehensive bibliographic database of scientific and technical engineering research available, covering all engineering disciplines. It includes millions of bibliographic citations and abstracts from thousands of engineering journals and conference proceedings.

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August 2020

Overview of Container Cloud Task Scheduling

👤 Cai Zhiyong, 👤 Xie Xiaolan

AICSconf '20: Proceedings of the 2020 Artificial Intelligence and Complex Systems Conference • August 2020, pp 50–55 • https://doi.org/10.1145/3407703.3407714

With the rapid development of cloud computing, virtualization technology represented by container technology is gradually replacing the original virtual machine technology. Introducing the container cloud and its main research direction. Starting from ...

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☐ **RESEARCH-ARTICLE**
OPEN ACCESS
January 2024

Taming Algorithmic Priority Inversion in Mission-Critical Perception Pipelines

👤 Shengzhong Liu, 👤 Shuochao Yao, 👤 Xinzhe Fu, 👤 Rohan Tabish, 👤 Simon Yu, + 4
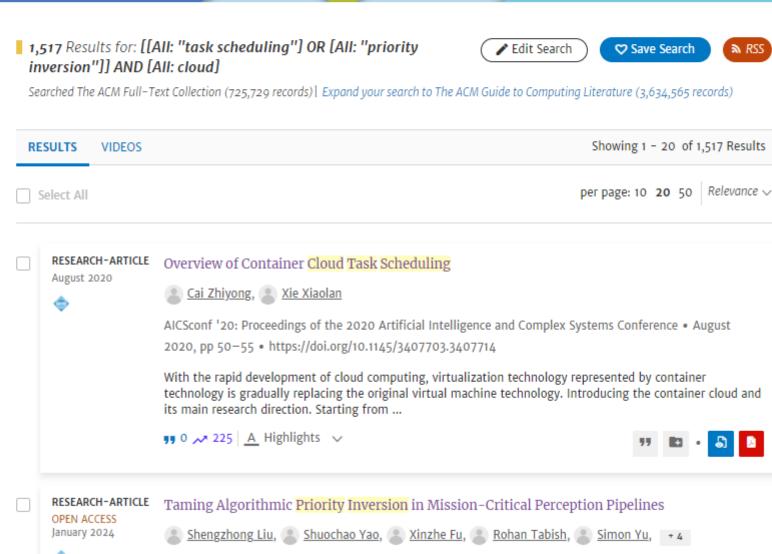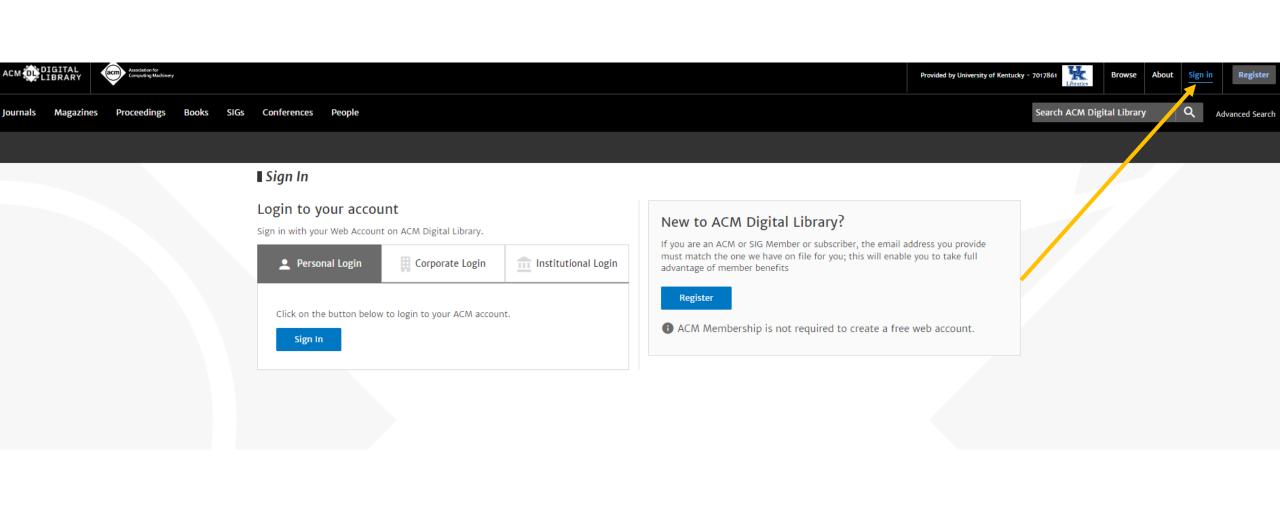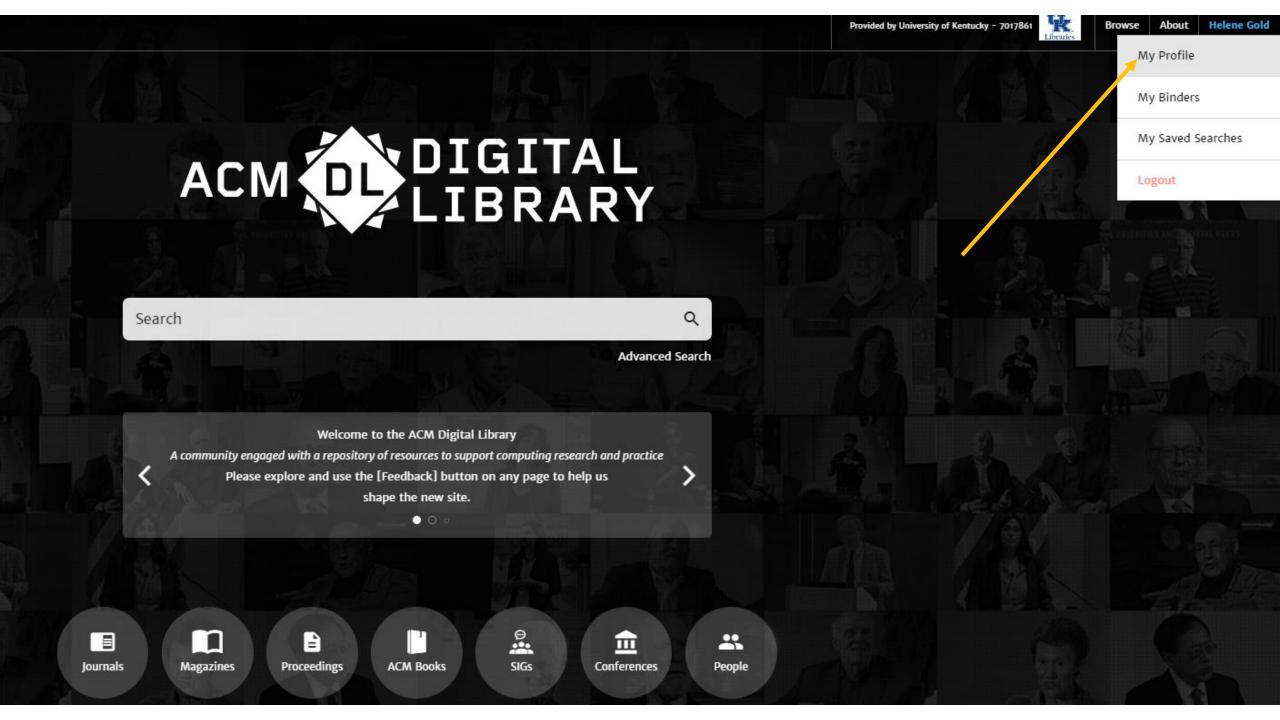
Communications of the ACM (CACM), Volume 67, Issue 2 • February 2024, pp 110–117 • https://doi.org/10.1145/3610801

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Communications of the ACM > Vol. 67, No. 2 > Taming Algorithmic Priority Inversion in Mission-Critical Perception Pipelines

RESEARCH-ARTICLE   OPEN ACCESS

Taming Algorithmic Priority Inversion in Mission-Critical Perception Pipelines

Authors: Shengzhong Liu, Shuochao Yao, Xinzhe Fu, Rohan Tabish, Simon Yu, Ayoosh Bansal, Heechul Yun, Lui Sha, Tarek Abdelzaher   Authors Info & Claims

Published: 25 January 2024 Publication History

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Abstract

The paper discusses *algorithmic priority inversion* in mission-critical machine inference pipelines used in modern neural-network-based perception subsystems and describes a solution to mitigate its effect. In general, *priority inversion* occurs in computing systems when computations that are "less important" are performed together with or ahead of those that are "more important." Significant priority inversion occurs

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Association for Computing Machinery

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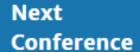
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An Analysis of Various Design Pathways Towards Multi-Terabit Photonic On-Interposer Interconnects

👤 Venkata Sai Praneeth Karempudi, 🧑 Janibul Bashir, 👤 Ishan G. Thakkar

ACM Journal on Emerging Technologies in Computing Systems (JETC), Volume 20, Issue 2 • Article No.: 6, pp 1–34 • https://doi.org/10.1145/3635031

In the wake of dwindling Moore's Law, to address the rapidly increasing complexity and cost of fabricating large-scale, monolithic systems-on-chip (SoCs), the industry has adopted dis-aggregation as a solution, wherein a large monolithic SoC is …

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☐ **RESEARCH-ARTICLE**
OPEN ACCESS
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Design and Validation of a Virtual Reality Mental Rotation Test

👤 Kristin A. Bartlett, 👤 Almudena Palacios-Ibáñez, 👤 Jorge Dorribo Camba

ACM Transactions on Applied Perception (TAP), Volume 21, Issue 2 • Article No.: 5, pp 1–22 • https://doi.org/10.1145/3626238

Mental rotation, a common measure of spatial ability, has traditionally been assessed through paper-based instruments like the Mental Rotation Test (MRT) or the Purdue Spatial Visualization Test: Rotations (PSVT:R). The fact that these instruments present …

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    👤 Sherali Zeadally

    ACM SIGOPS Operating Systems Review (SIGOPS), Volume 31, Issue 1 • Jan. 1997, pp 78–
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☐   **RESEARCH-ARTICLE**
    September 2014

    Online deception in social media

    👤 Michail Tsikerdekis, 👤 Sherali Zeadally

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THE NEW FUNDER LANDSCAPE FOR DATA SHARING

In August 2022, the Office of Science and Technology Policy released a memo directing funding agencies to promote public access to the products of federally funded research by requiring researchers to:
- Make scholarly publications freely available without embargo
- Make research data freely available
- Attach specific metadata to research outputs to promote access and discoverability

For major funders, these new policies must start going into effect at the start of 2026.

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THE NEW FUNDER LANDSCAPE FOR DATA SHARING

"Scientific data include **the recorded factual material commonly accepted in the scientific community as of sufficient quality to validate and replicate research findings.**

"Such scientific data **do not** include laboratory notebooks, preliminary analyses, case report forms, drafts of scientific papers, plans for future research, peer-reviews, communications with colleagues, or physical objects and materials, such as laboratory specimens, artifacts, or field notes."

"Scientific data underlying peer-reviewed scholarly publications resulting from federally funded research should be made freely available and publicly accessible by default at the time of publication," and data produced as part of federally funded research that does not result in publication should be shared as well.

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THE NSF'S DRAFT PUBLIC ACCESS PLAN

NSF Public Access Plan 2.0:

"To ensure that funded researchers have considered data deposition and appropriate repositories, **NSF plans to more explicitly and systematically require researchers to include**, as part of these [data management and sharing plans], **details about how the data produced will be shared publicly** and with other researchers **and anticipated repositories for the data**, and to **ensure that costs associated with the chosen repository are reflected in the proposal budget request.**"

A similar data management and sharing policy is already in effect for NIH grants.

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HOW DOES DATA GET SHARED?

There is a strong funder preference for sharing data in **established data repositories.**

May be **discipline-specific** (such as the NCBI's Sequence Read Archive) or **generalist** (Dryad, Figshare, Zenodo, Dataverse, etc.).

Insufficient forms of data sharing:
- Stating that data can be accessed by contacting the PI/other researcher
- Hosting data in LabArchives
- Only sharing representations of data, such as charts

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DESIRABLE CHARACTERISTICS OF DATA REPOSITORIES

- Unique persistent identifiers (such as DOIs)
- Free and easy access for users
- Documented risk management practices
- Retention policy (clear statement of how long data will be accessible)
- Robust metadata for discovery, reuse, and citation
- Curation and quality assurance

Desirable Characteristics of Data Repositories for Federally Funded Research
From the National Science and Technology Council

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BUDGETING FOR DATA MANAGEMENT AND SHARING ACTIVITIES

For institutions:

Hofelich Mohr, Alicia, et al. Making Research Data Publicly Accessible: Estimates of Institutional & Researcher Expense. Washington, DC: Association of Research Libraries, February 2024. https://doi.org/10.29242/report.radsexpense2024.

BUDGETING FOR DATA MANAGEMENT AND SHARING ACTIVITIES

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NOT ALL SHARED DATA IS GOOD DATA

SEPTIN8   SEP8   8-Sep   44812

Gene name errors still on the rise

Abeysooriya et al, "Gene name errors: Lessons not learned," *PLOS Computational Biology* (2021).

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DATA MANAGEMENT AND SHARING: PHASES AND ACTIVITIES

- Planning, Design, and Start Up of Project
  Example: Determining storage solutions for active research data

- Data Collection, Storage, and Management
  Example: Creating or reviewing established quality-control mechanisms/procedures

- Making Data Broadly Available
  Example: Deciding what data to share and where to do so

- Data Retention, Including Preservation, Archive, and Long-Term Access
  Example: Migrating files to new formats or across systems as needed

- Project Closeout and Compliance
  Example: Completing funder or institutional reports on data management and sharing

Realities of Academic Data Sharing:
https://www.arl.org/realities-of-academic-data-sharing-rads-initiative/

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LIBRARY DATA MANAGEMENT ACTIVITIES

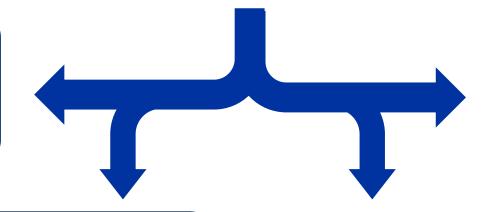| Data Management and Sharing Phase	DMS Activity
Planning, Design and Start Up of Projects	• Reviewing or preparing data management (and sharing) plans • Identifying appropriate storage platforms for active research data
Data Collection, Storage, and Management	• Reviewing data documentation (such as data dictionaries and codebooks) • Recommending data analysis tools and processes that support reproducibility and transparency
Making Data Broadly Available	• Recommending data repositories • Consulting on preparing data for sharing, include file format conversion, licensing, and application of persistent identifiers

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DATA STAKEHOLDERS AT UK

Data Collection, Storage, and Management

The Research Data Librarian might consult on data documentation practices and workflows.

The Office of Technology Commercialization might sign a data use agreement so a researcher can access restricted use data.

The Center for Clinical and Translational Sciences might provide support in configuring REDCap accounts.

Departmental IT might set up local network space for data storage.

Realities of Academic Data Sharing:
https://www.arl.org/realities-of-academic-data-sharing-rads-initiative/

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CHALLENGES AND OPEN QUESTIONS

- What additional infrastructure is needed to ensure that storage keeps pace with data generation?

- What obstacles hinder the reuse and reproducibility of Big Data and complex data types, and how can they be ameliorated?

- How do we best combine discipline expertise with expertise in data management, curation, and sharing to make sure datasets are actually reusable?

Find updates on the NSF's public access policy, including webinars and requests for information.

For UK-specific perspective, read the 2022 Research Data Management Task Force Report.

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THANK YOU!

QUESTIONS?

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