



Research Infrastructures and Tools for Reproducible Data Communication Research

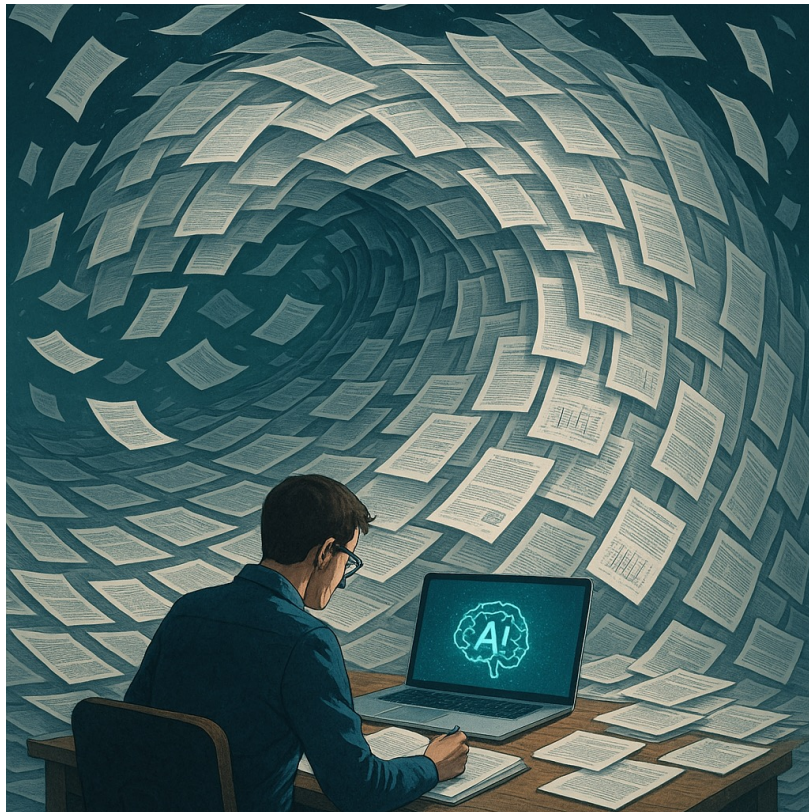


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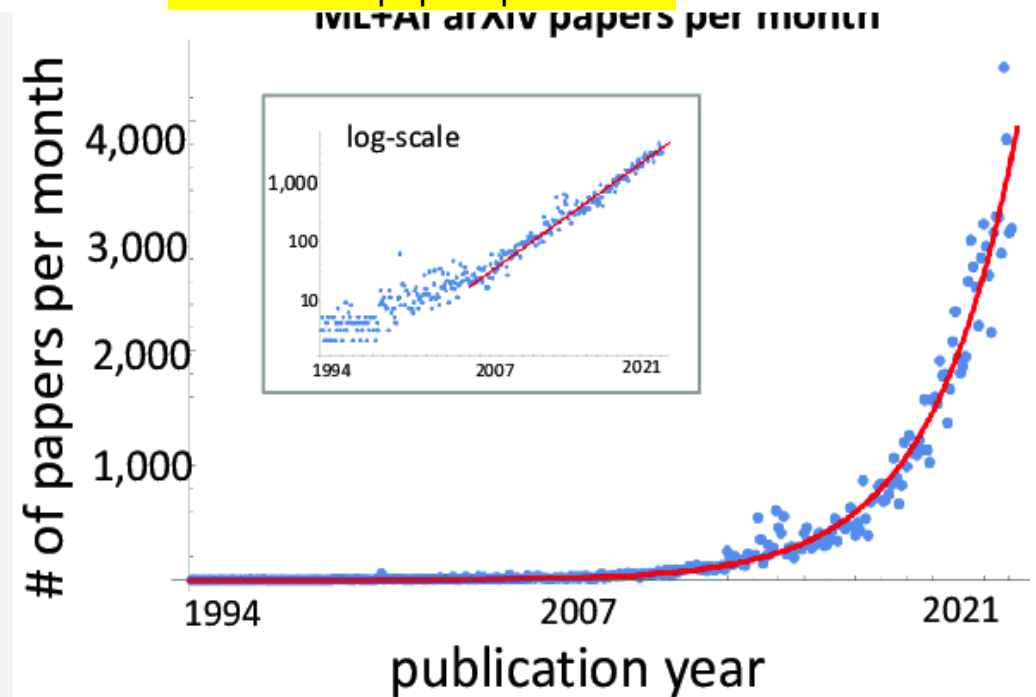
ACM Sigcomm 2025 Non-paper session
Coimbra, September 9th 2025



The deluge of publications



ML+AI arXiv papers per month



Number of papers published per months in the arXiv categories of AI... |
Download Scientific Diagram

Hard and Harmful to reproduce



DOI:10.1145/2812803

**To encourage repeatable research, fund
repeatability engineering and reward
commitments to sharing research artifacts.**

BY CHRISTIAN COLLBERG AND TODD A. PROEBSTING

Repeatability in Computer Systems Research

CACM, Vol 59, Issue 3



Why Most Published Research Findings Are False

John P.A. Ioannidis



PLoS Medicine | www.plosmedicine.org

0696

August 2005 | Volume 2 | Issue 8 | e124

Summary

There is increasing concern that most current published research findings are false. The probability that a research claim is true may depend on study power and bias, the number of other studies on the same question, and, importantly, the ratio of true to no relationships among the relationships probed in each scientific field. In this framework, a research finding

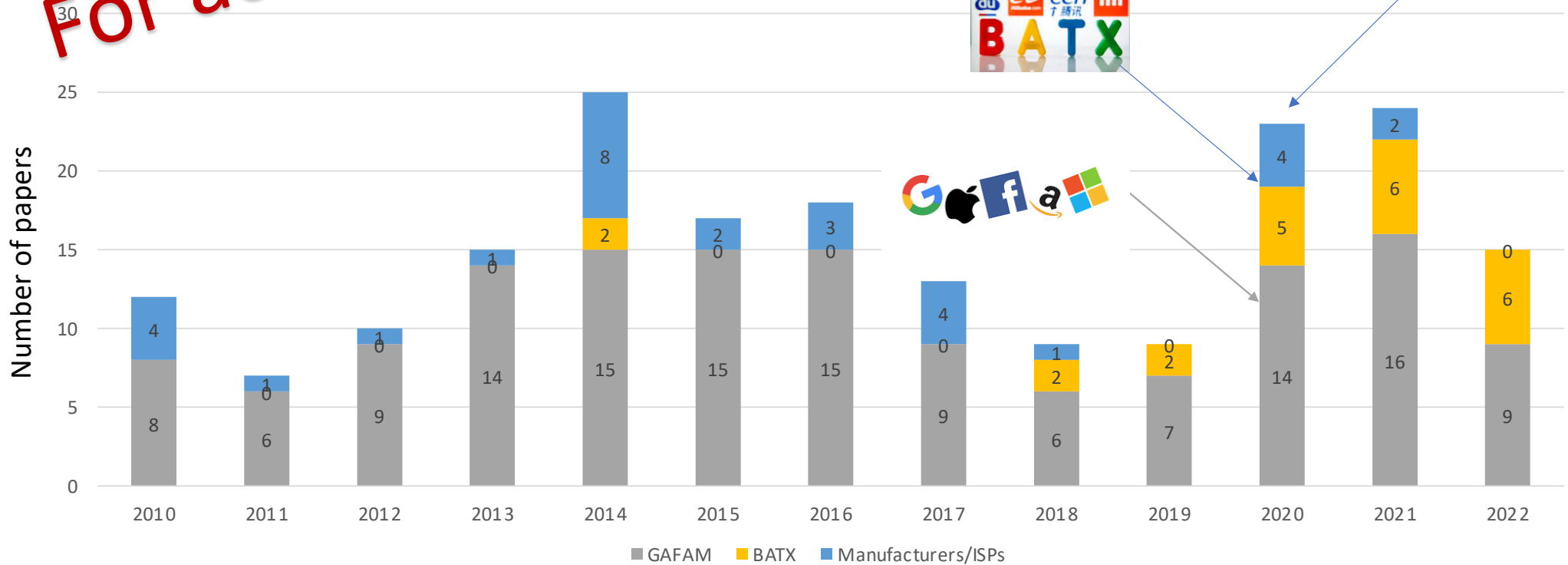
Risk
For trust in Science



slicesRI

Risk
For academia

ACM SIGCOMM Papers



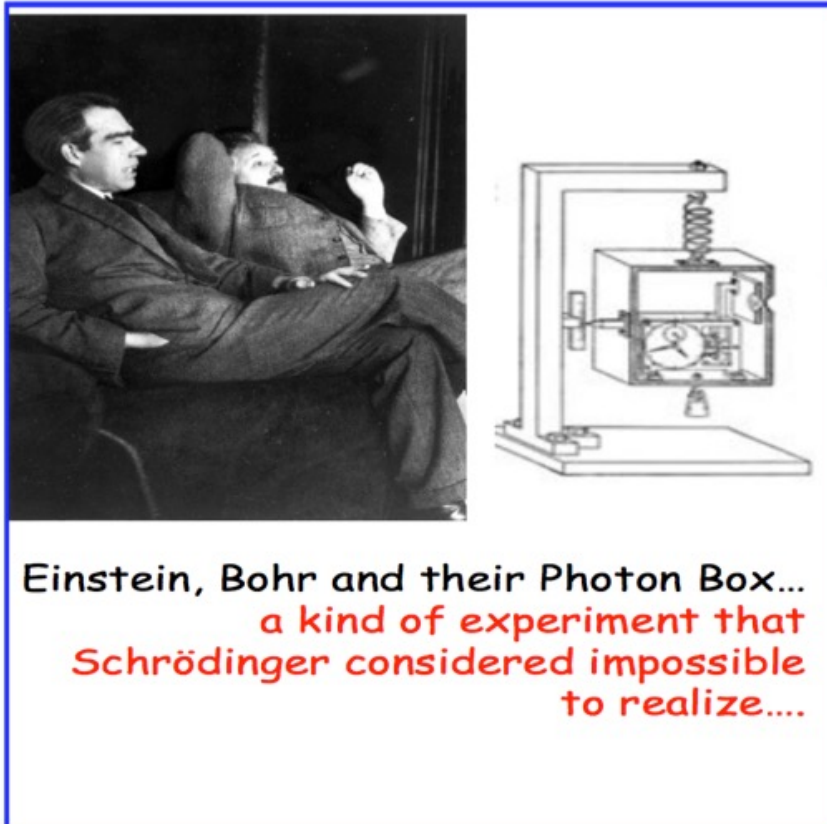
ACM Sigcomm Edition (year)

ACM Sigcomm 2025 edition

- Number of papers: 68
- Almost 60% of the papers from large industry
- Often a large number of authors!!!
 - US tech: 14
 - China Tech: 25
 - Alibaba: 11
 - Bytedance: 11



Thought experiments



THE NOBEL PRIZE

Nobel Price in Physics 2022

For groundbreaking **experiments** using entangled quantum states, where two particles behave like a single unit even when they are separated

Nobel Price in Physics 2023

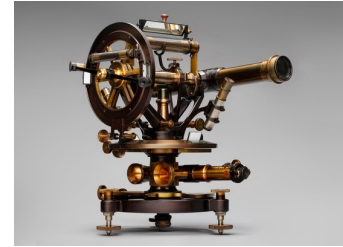
for **experimental** methods that generate attosecond pulses of light for the study of electron dynamics in matter



Research Infrastructures as a Scientific Instrument



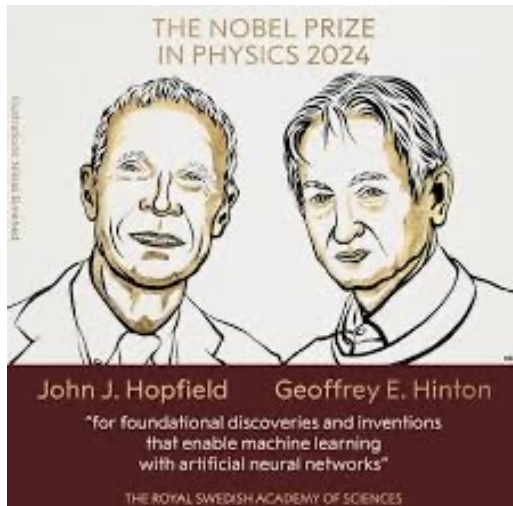
Scientific instruments



- Over **90% of scientific papers** published in the past decade involved the use of advanced scientific instruments.
- Without advanced instruments, the **rate** of scientific progress and **depth** of understanding would be significantly diminished
- It offers a vital insight to the underlying information in improvising the **understanding of science methodologies and practices**. They reliably and precisely help the scientist to **measure the subject of their investigations**.

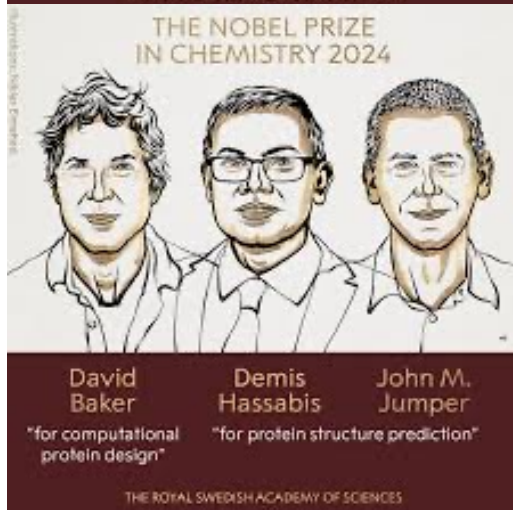
The transformative role of AI/ML in Science

THE
NOBEL
PRIZE



Nobel Price in Physics 2024

*"for foundational discoveries and inventions that
enable **machine learning** with artificial neural
networks"*



Nobel Price in Chemistry 2024

*"for **computational** protein design
for protein structure **prediction**"*



Potential to cover the full value chain



- The importance of **data**, scale and diversity, could lead to the joint interest for building **foundation models**
- The **future of some emerging technologies** will likely be shaped not only by who builds the best models, but who controls their data, training, and behavior
- Only a **few select companies** to afford the production costs for large, state of the art foundation models
- Incentivize cooperation among various stakeholders

Openness vs Competition

Openness accelerates science

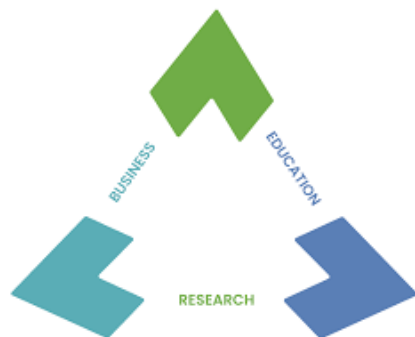
but competition drives innovation monetization

The contradiction lies in the fact that **what is good for collective knowledge is often bad for competitive advantage**, and vice versa.



SUSTAINABLE

 slices **RI** as a Catalyst



Knowledge Triangle



INCLUSIVE



Thanks for your attention

Questions?

For more information, please contact:

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