

MIT Technology Review:
**AI is wrestling with a
replication crisis**

Will Douglas Heaven - Nov 12, 2020

Pablo Mollá



INTRODUCTION:

MIT Technology Review:

AI is wrestling
with a replication
crisis





- **Pablo Mollá**
- **Alicante, Spain**
- **Mathematics in Madrid**
- **Gym, Reading, Traveling**





- Master in Data Science
 - GPT-4 ? Bard? Llama?
 - Healthcare? Finance?



- Professional Prospective
 - Apply / replicate models into my workplace





- 1. Lack of Transparency in AI Research**
- 2. Science & Replication**
- 3. Black-Box Problem & Code Accessibility**
- 4. Resource Disparity**
- 5. Trust and Progress**



Google's Study: International
evaluation of an AI system for
breast cancer screening
01 JAN 2020



Scientists Response:
Transparency and
reproducibility in artificial
intelligence
14 OCT 2020



- Advancing Scientific Knowledge and Innovation
 - Learn from existing work, understand limitations, build upon it
 - Robustness, efficiency and effectiveness
- Building Trust and Ethical Assurance
 - Data, decision-making processes, hyperparameters, etc
 - Integrity, independently verified, ethical considerations (predictions reliable and unbiased)



IMPACT



DATA

HARDWARE

TRAINING

CODE

METADATA

PRINCIPAL CONTRIBUTION

SOLUTIONS



DATA

**Self-built
datasets
Auditors**

HARDWARE

**Trickle-down effect
Efficiency +
Sharing Initiatives
Limited Access**

CODE /METADATA

**Standards
Challenges
Students
Projects**

RESEARCH

**Splitting Research
Publications
Open Approach
New way of Research**



Trickle-Down Economics

[tri-kal-'daʊn,e-ka-'nɑ-miks]

The theory that tax breaks and benefits for corporations and the wealthy will eventually benefit everyone.

QUOTE AND PEOPLE



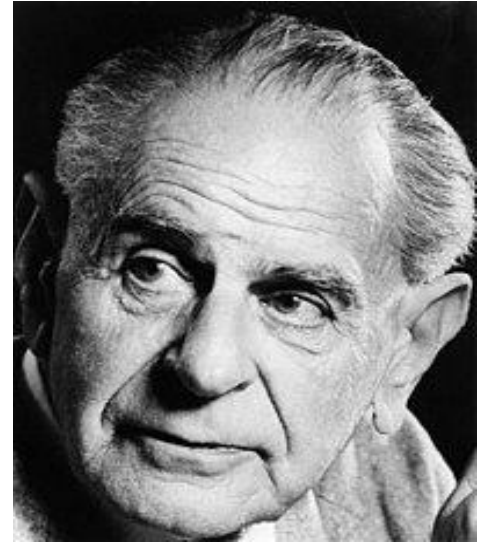
- "Science that can't be replicated falls by the wayside"



René Descartes



David Hume



Karl Popper

NOVELTY + GENERALITY



Exploration of the challenges and implications of replicability in AI research



Biomedecine



Psychology

FIGURE



The Tower of Babel



Sample Representativeness:

- **How does the article link the AI replication crisis to potential policy responses or regulatory frameworks?**
- **Is there a discussion on how governments, international bodies, or industry groups could implement standards or guidelines to mitigate this crisis?**

Impact on Policy:

- **Are the examples and case studies cited in the article representative of the broader AI research community, or do they focus on a specific subset (such as certain high-profile labs focused on Healthcare)?**

WRAP UP

Profit vs Public Good





- The replication crisis in AI highlights challenges in reproducing research results.
- This crisis impacts trust in AI technologies.
- Transparency and reproducibility are crucial in AI research.
- It emphasizes the need for ethical practices and rigorous scientific methodology in AI.

CONCLUSION



Call to action for the entire AI community, including big tech companies and academic researchers, to prioritize these principles to advance the field in a sustainable and trustworthy manner.





How does the replication crisis in AI affect public trust in AI technologies, and what steps can the AI community take to restore confidence?



- https://es.wikipedia.org/wiki/Karl_Popper
- <https://www.technologyreview.com/2020/11/12/1011944/artificial-intelligence-replication-crisis-science-big-tech-google-deepmind-facebook-openai/>
- <https://www.nature.com/articles/s41586-020-2766-y>