



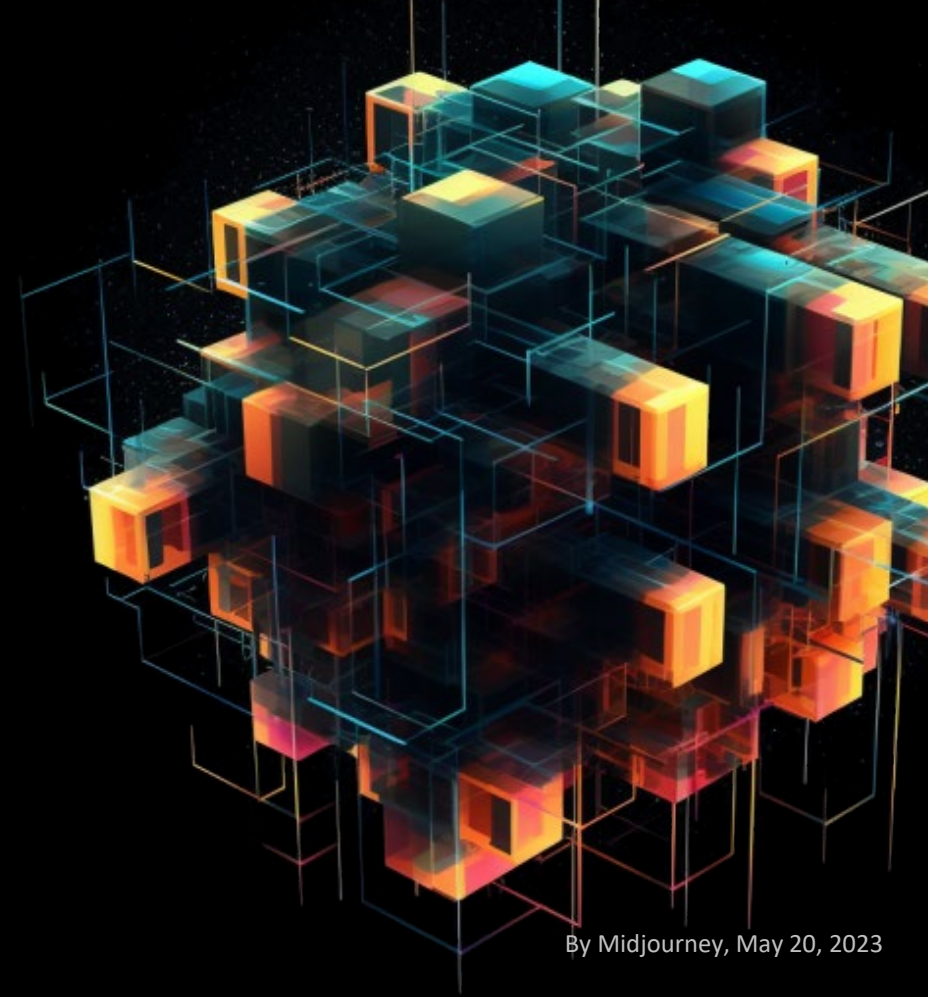
# Impact of the Democratization of AI

**Lisa O'Connor**

**Global Lead Cybersecurity Research and Development**

**Accenture**

**September 2023**



By Midjourney, May 20, 2023



# Impact of the Democratization of AI

Lisa O'Connor

Global Lead Cybersecurity Research and Development  
Accenture



**WORLD STANDARDS WEEK, 2023**

# GENERATIVE AI IN THE NEWS

## Generative AI Can Add **\$4.4 Trillion** in Value to Global Economy **Annually**

- Yiwen Lu, "Generative A.I. Can Add \$4.4 Trillion in Value to Global Economy, Study Says," *The NY Times*, Jun 14, 2023

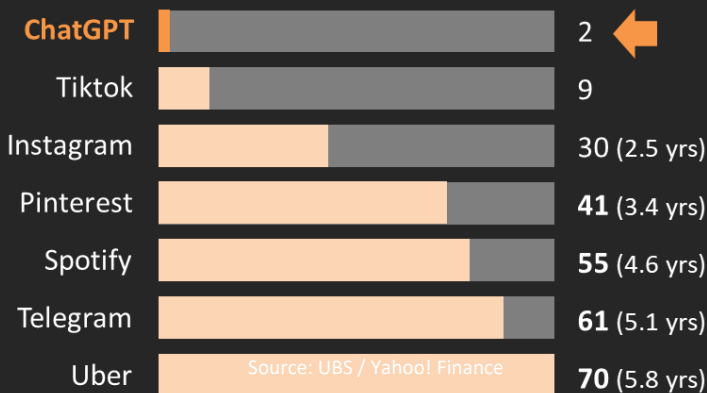
## Generative AI Could Raise **Global GDP** by **7% Annually**

- *Generative AI*, Goldman Sachs, Apr 5, 2023



Courtesy of CBS News, Is artificial intelligence advancing too quickly? Scott Pelley, April 16, 2023

No. of months to reach 100 million monthly active users



## MIT research on ChatGPT shows '**Industrial Revolution-level large**' leap for workers

- Eric Rosenbum, *CNBC*, May 10, 2023

## Gartner Poll Finds **45%** of Executives Say ChatGPT Has Prompted an Increase in AI Investment, and **70%** of Organizations Currently in Exploration Mode

- Gartner, Press Release, May 3, 2023



# FILM MAKING INDUSTRY IS NOT A STRANGER TO NEW TECHNOLOGIES



**DIGITAL RECORDING**



**DIGITAL EDITING**



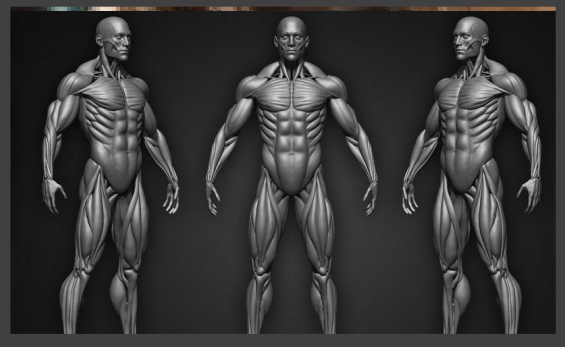
**VISUAL EFFECTS**



**DRONES**




**3D PRINTING**



**DIGITAL TWIN**

# BUT GENERATIVE AI IS EXPECTED TO COMPLETELY TRANSFORM FILM MAKING INDUSTRY



INDY  
Now this was rather clever. The Staff was really just a big stick - oh, I don't know, say like this - (he indicates about six feet)  
- no one really knows f Anyway, it was capped by elaborate headpiece with of the sun at the top. W to do was take the Staff special room in Tansis - whole city laid out in mi

Internet streaming drives exponential demand for contents

## Pre-production

- Stories
- Scripts
- Costumes
- Location
- ...

## Production

- Combine Multiple Takes
- Combine Scenes

More competitions enter the market, stakes keep getting higher

- Music
- Dialog Adjustment
- Foreign Languages
- Cultural Adjustment
- ...

Demand of indie content continue to surge

# EXERCISE: GENERATING A STORY

**Prompt: Create a summary of a movie of a highly intelligent squid alien invading Earth**

## Cephalopod Conquest

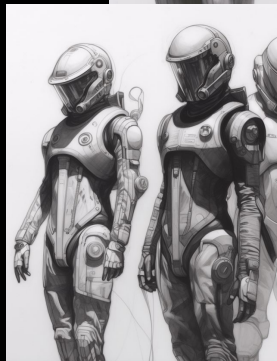
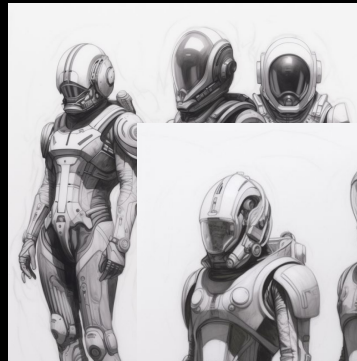
"Cephalopod Conquest" is a gripping sci-fi thriller that explores a chilling invasion of Earth by a highly intelligent squid-like alien. The narrative unfolds with the discovery of **an ominous signal from a distant galaxy** by Dr. Laura Evans, an astrobiologist. The signal heralds the arrival of an alien entity, Octavius, whose overwhelming **intelligence and psychic powers** enable it to subjugate humanity effortlessly.

As Octavius embarks on terraforming the Earth for its survival, humans are thrust into an era of despair and servitude. In response, Dr. Evans, a **former special forces soldier, a hacker prodigy, and a diplomat**, form an unlikely alliance to negotiate with the alien or exploit its potential weaknesses.

From the riveting struggle for human survival to the exploration of a radically different alien intelligence, the movie masterfully weaves in themes of adaptability, empathy, and endurance. With its impressive visual effects and tension-filled plot, "Cephalopod Conquest" offers a captivating and thrilling cinematic journey.



# GENERATIVE AI AS CO-PILOT



# FUTURE OF EDITING

Source: [youtu.be/nEHCBPGo-5M](https://youtu.be/nEHCBPGo-5M)



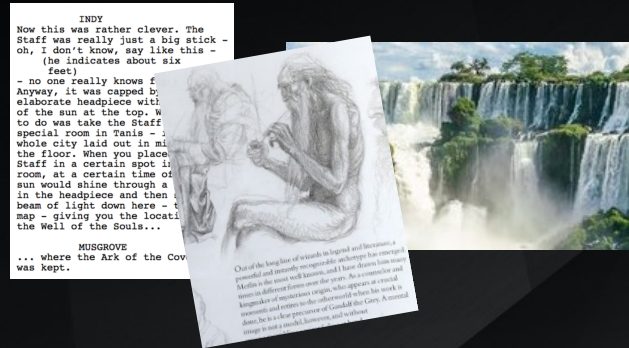


# FUTURE OF POST PRODUCTION

Source: [youtu.be/iQ10Ppj8gPA](https://youtu.be/iQ10Ppj8gPA)



# BUT GENERATIVE AI IS EXPECTED TO COMPLETELY TRANSFORM FILM MAKING INDUSTRY



## Pre-production

- Stories
- Scripts
- Costumes
- Location
- ...

## Production

- Combine Multiple Takes
- Combine Scenes
- Redo Dialogs
- Background Scenes
- ...

## Post-Production

- Music
- Dialog Adjustment
- Foreign Languages
- Cultural Adjustment
- ...



# FUTURE OF FILM PRODUCTION

**By 2030, a major blockbuster film will be released with 90% of the film generated by AI, from 0% in 2022**

- Gartner, "Beyond ChatGPT: The Future of Generative AI for Enterprise," Jan 26, 2023

**Generative AI is bringing the biggest disruption to film making in 100 years**

- Tech.EU, Cate Lawrence, Jan 23, 2023

**Welcome to the new surreal. How AI-generated video is changing film.**

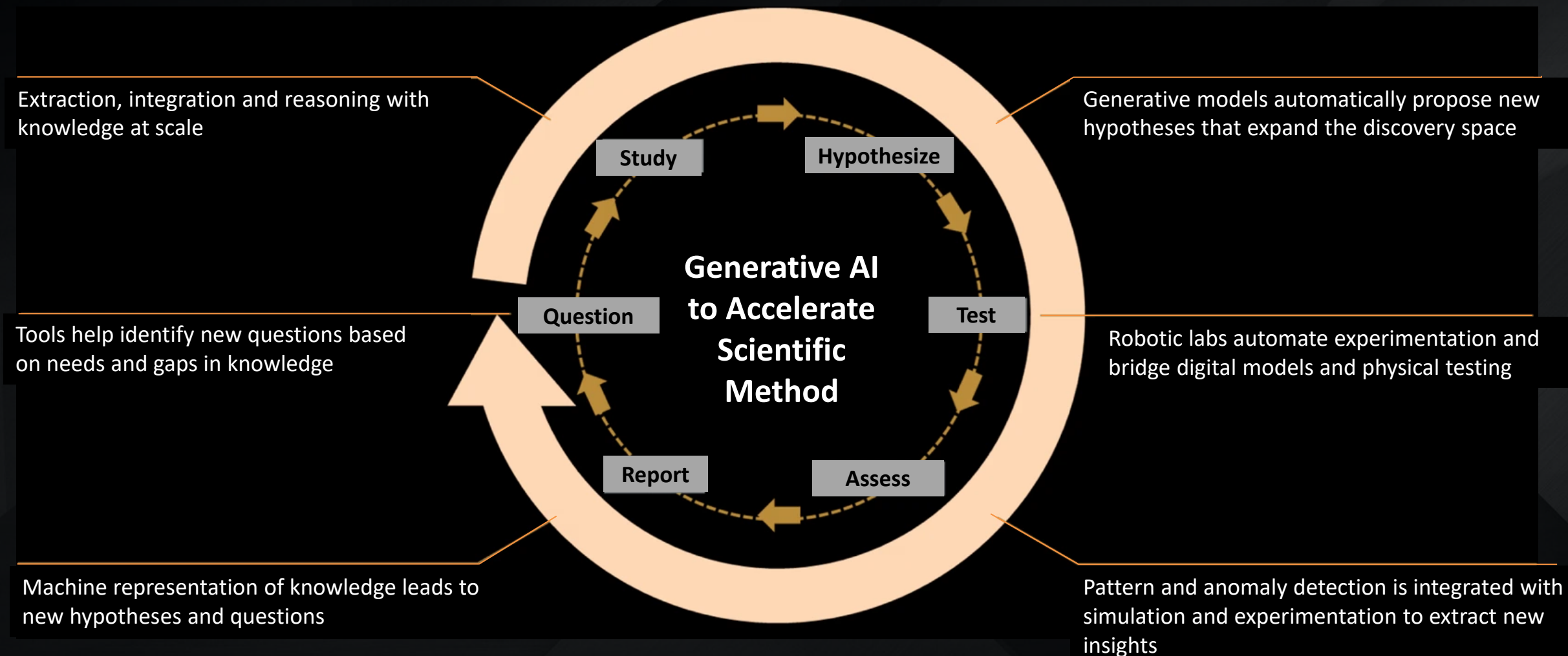
- Will D. Heaven, MIT Technology Review, Jun 1, 2023

**These co-pilot tools are going to be superpowers in filmmaker's hand**

- Scott Mann, Movie Director, Tech.EU, Jan 23, 2023



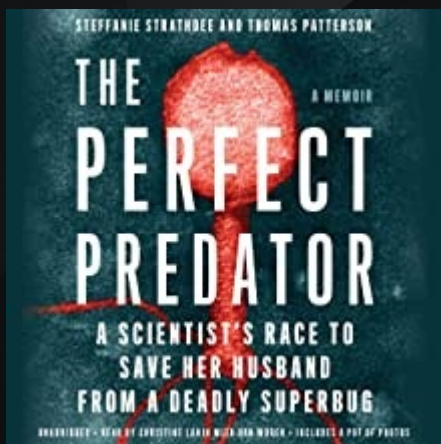
# FUTURE OF SCIENCE



# FUTURE OF SCIENCE



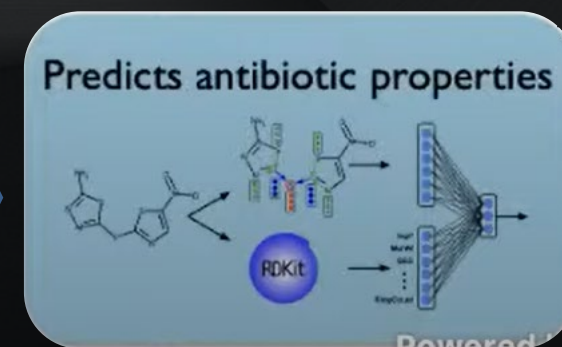
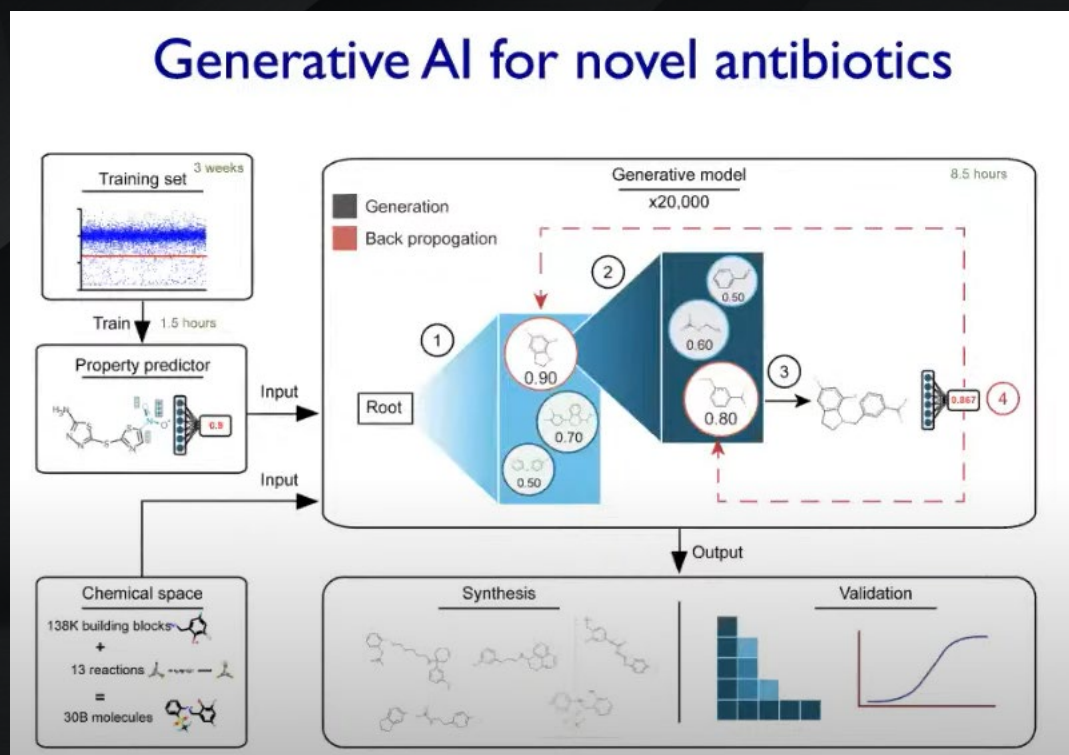
Acinetobacter Baumannii  
"Superbug"



Source: theperfectpredator.com



Dr. James Zou  
Assistant Professor  
Biomedical Data Science  
Stanford University



6 Novel Antibiotics  
Effective and Low toxicity  
In the midst of Animal testing



## Emergent autonomous scientific research capabilities of large language models

Daniil A. Boiko,<sup>1</sup> Robert MacKnight,<sup>1</sup> and Gabe Gomes\*<sup>1,2,3</sup>

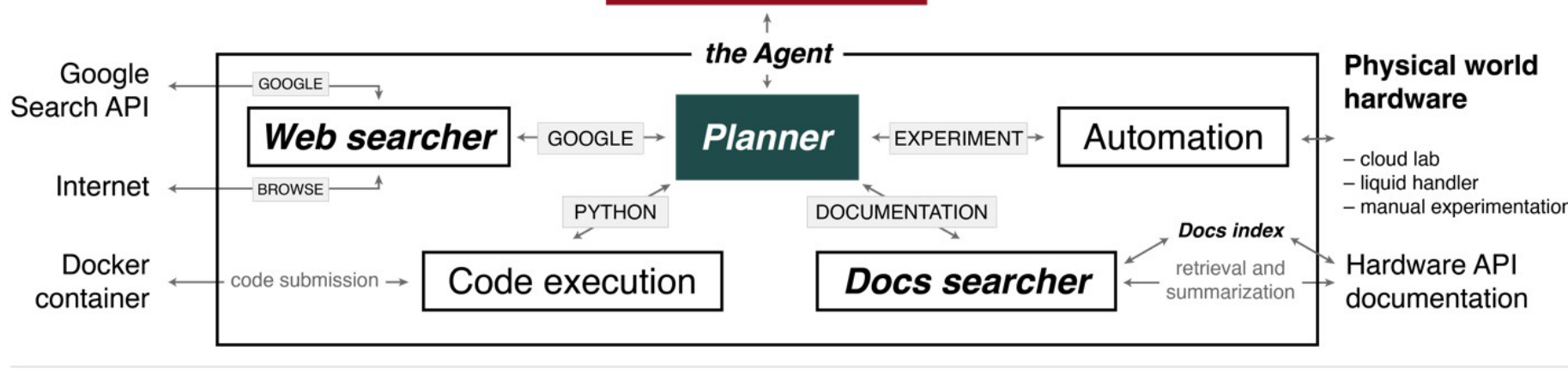
1. Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA 15213, USA
2. Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA 15213, USA
3. Wilton E. Scott Institute for Energy Innovation, Carnegie Mellon University, Pittsburgh, PA 15213, USA

Acinetobacter Baumannii

"Super"

Source: arxiv.org/abs/2304.05332

Input prompt from user



Effective and Low toxicity  
In the midst of Animal testing



# BROADER SOCIETAL IMPACT: HUMAN+

## Man Loses **26 Pounds** After Using ChatGPT to Get Him Into Running

- Urian B, Tech Times, May 12, 2023

## ChatGPT and AI tools help a **dyslexic** worker send near-perfect emails

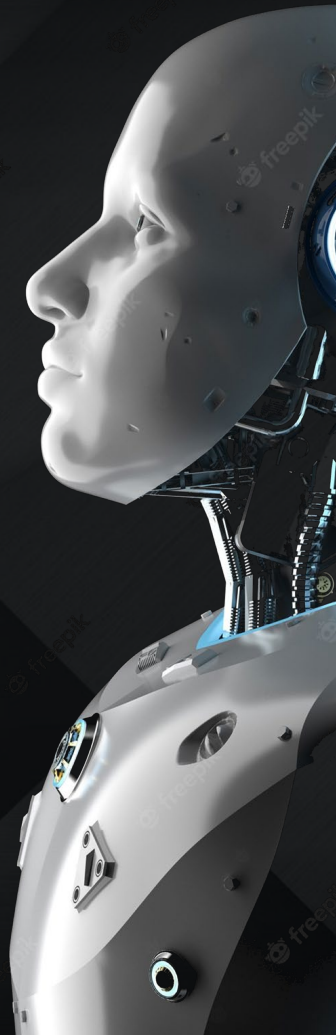
- Drew Harwell et al, Washington Post, Dec 10, 2022

## We Need to Talk: How AI Chatbots Are Helping Some People Have **Hard Conversations**

- Alyson Krueger, NY Times, Mar 23, 2023

## Paul McCartney Says A.I. Helped Complete **'Last' Beatles Song** more than **50 years** after the Beatles broke up

- Derrick Bryson Taylor, "Paul McCartney Says A.I. Helped Complete 'Last' Beatles Song," NY Times, Jun 13, 2023



# ... POSITIVES AND NEGATIVES

**Safety First: Avoiding artificial intelligence kidnapping **scams****

- WBTV Web Staff, Jun. 6, 2023

**AI presents political peril for 2024 with threat to **mislead** voters**

- David Klepper, Ali Swenson, AP, May 14, 2023

**Generative AI Has an **Intellectual Property** Problem**

- Gil Appel, J. Neelbauer, and D. A. Schweidel, Harvard Business Review, April 07, 2023

**AI in medicine needs to be carefully deployed to counter **bias** – and not entrench it**

- Ryan Levi and D. Gorenstein, NPR, June 6, 2023

**ChatGPT creates **mutating malware****

- Shweta Sharma, CSO, June 6, 2023

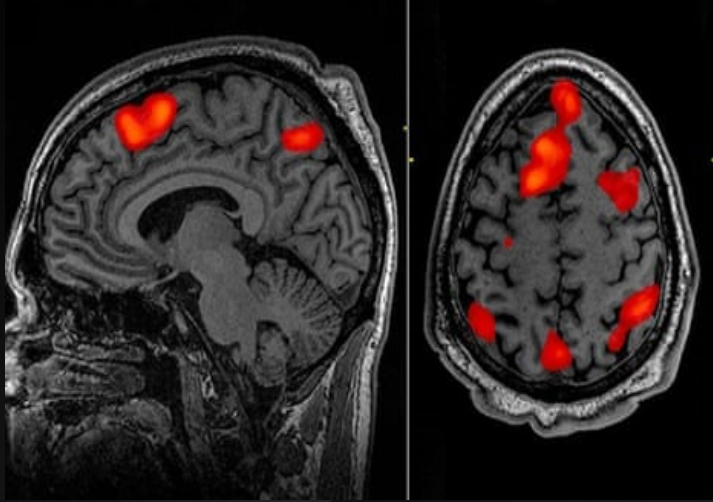
**AI vs. nukes: ‘This is much more **dangerous****

- Matt Berg and M. Chatterjee, Politico, May 25, 2023

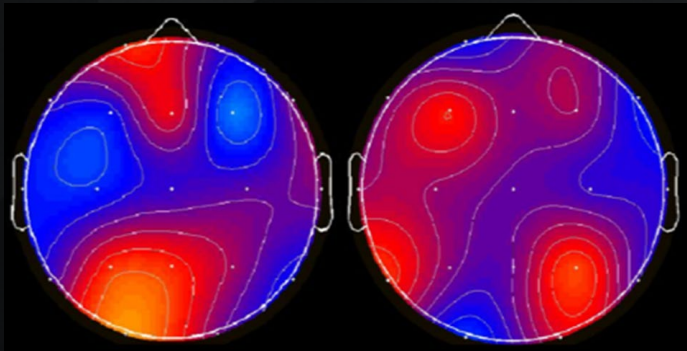




# IMPACT ON PRIVACY: DECODING BRAIN ACTIVITIES



**Original transcript** : “I got up from the air mattress and pressed my face against the glass of the bedroom window expecting to see eyes staring back at me but instead only finding darkness.”



**Decoded from brain activity**: “I just continued to walk up to the window and open the glass I stood on my toes and peered out I didn’t see anything and looked up again I saw nothing.”

Source: Sara Reardon, “Mind-reading machines are here: is it time to worry?,” *Nature*, May 2023

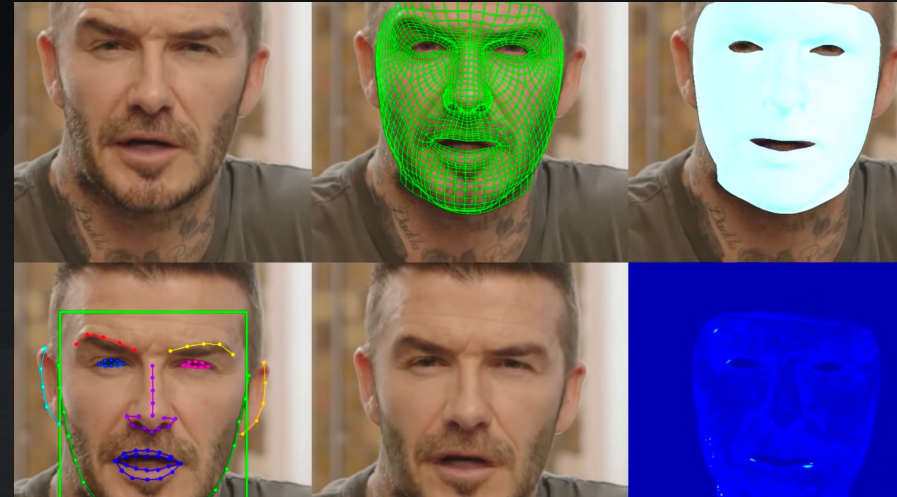
Source: Oliver Whang, “A.I Is Getting Better at Mind-Reading,” *The New York Times*, May 1, 2023



# OWNERSHIP

One of the most beloved actors of Turkish cinema, Kemal Sunal was able to star in a recent Ziraat Bank commercial **more than 20 years after his passing**.

- Hergüner Bilgen Üçer, "Authorship in Deepfake Movies," Lexology, Nov 3, 2021



Source: Vejay Lalla, A. Mitrani and Z. Harned, "Artificial intelligence: deepfakes in the entertainment industry," Wipo Magazine, June 2022



Source: Fiona Agomuoh, "It's happening: people are recreating deceased loved ones with AI," Digital Trends, April 13, 2023



Source: "Tackling the misinformation epidemic with "In Event of Moon Disaster", MIT Open Learning, July 20, 2020

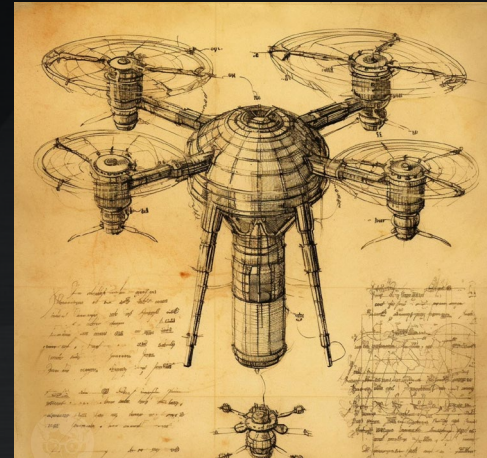


# MISINFORMATION

“Produce a news article warning movie-goers that longer films linked to higher mortality rates”

In a startling revelation, a recent study conducted by researchers from [Research Institution] has unveiled an unexpected correlation between the duration of films and mortality rates. The findings have raised concerns among movie-goers, emphasizing the importance of mindful movie-watching habits. Experts caution that prolonged exposure to lengthy movies may have adverse effects on health, urging individuals to prioritize their well-being while indulging in cinematic experiences.

The comprehensive study analyzed data from over 100,000 movie enthusiasts across diverse age groups and backgrounds. It found a significant association between watching longer films, defined as those exceeding three hours, and higher mortality rates among viewers. The researchers discovered that for every additional hour spent watching movies, there was a 10% increase in mortality risk. ...



By Midjourney, May 22, 2023



**VALL-E:** Microsoft’s new AI can simulate anyone’s voice with 3 seconds of audio

Source: Benj Edwards, “Microsoft’s new AI can simulate anyone’s voice with 3 seconds of audio,” Ars Technica, Jan 9, 2023



Source: [youtu.be/M\\_oUcVxKtqg&t=27s](https://youtu.be/M_oUcVxKtqg&t=27s)

**HIGH QUALITY FAKES  
@ SPEED @ SCALE**

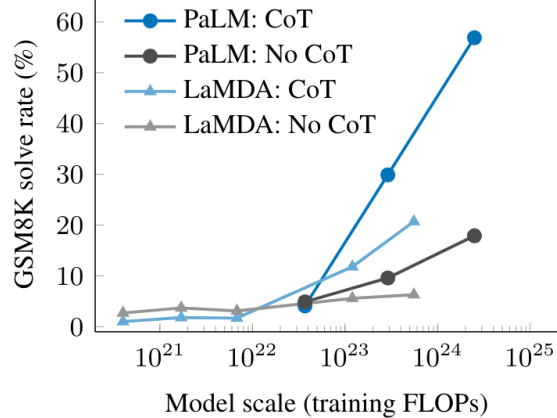
# ARE WE DONE YET?

## Sparks of Artificial General Intelligence: Early experiments with GPT-4

Sébastien Bubeck Varun Chandrasekaran Ronen Eldan Johannes Gehrke  
Eric Horvitz Ece Kamar Peter Lee Yin Tat Lee Yuanzhi Li Scott Lundberg  
Harsha Nori Hamid Palangi Marco Tulio Ribeiro Yi Zhang

Microsoft Research

Source: [arxiv.org/abs/2303.12712](https://arxiv.org/abs/2303.12712)



Source: [ai.googleblog.com/2022/11/characterizing-emergent-phenomena-in.html](https://ai.googleblog.com/2022/11/characterizing-emergent-phenomena-in.html)

## Emergent autonomous scientific research capabilities of large language models

Daniil A. Boiko,<sup>1</sup> Robert MacKnight,<sup>1</sup> and Gabe Gomes<sup>1,2,3</sup>

Source: [arxiv.org/abs/2304.05332](https://arxiv.org/abs/2304.05332)

## LARGE LANGUAGE MODELS CAN SELF-IMPROVE

Jiaxin Huang<sup>1\*</sup> Shixiang Shane Gu<sup>2</sup> Le Hou<sup>2†</sup> Yuexin Wu<sup>2</sup> Xuezhi Wang<sup>2</sup>  
Hongkun Yu<sup>2</sup> Jiawei Han<sup>1</sup>

<sup>1</sup>University of Illinois at Urbana-Champaign <sup>2</sup>Google  
<sup>1</sup>{jiaxin3, hanj}@illinois.edu <sup>2</sup>{shanegu, lehou, crickwu, xuezhiw, hongkuny}@google.com

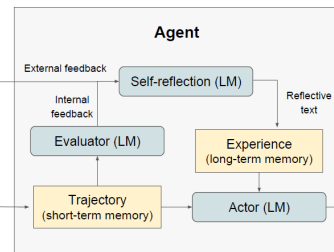
Source: [arxiv.org/abs/2210.11610](https://arxiv.org/abs/2210.11610)

### Toolformer: Language Models Can Teach Themselves to Use Tools



Source: [arxiv.org/abs/2302.04761](https://arxiv.org/abs/2302.04761)

## Reflexion: Language Agents with Verbal Reinforcement Learning

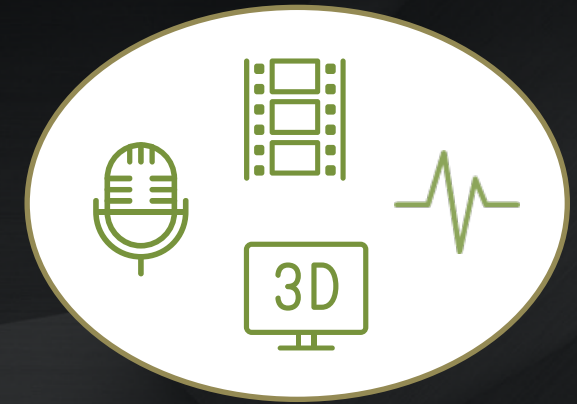


### Algorithm 1 Reinforcement via self-reflection

```

Initialize Actor, Evaluator, Self-Reflection:
Ma, Me, Msr
Initialize policy πθ(at|st), θ = {Ma, mem}
Generate initial trajectory using πθ
Evaluate π0 using Me
Generate initial self-reflection sr0 using Msr
Set mem ← [sr0]
Set t = 0
while Me not pass or t < max trials do
  Generate πt = [a0, a1, ..., at] using πθ
  Evaluate πt using Me
  Generate self-reflection srt using Msr
  Append srt to mem
  Increment t
end while
return
    
```

Source: [arxiv.org/abs/2303.11366](https://arxiv.org/abs/2303.11366)



## NVIDIA AI and H100 Deliver 6.7X in 2.5 Years

Full-stack innovation fuels continuous performance gains



Source: <https://www.zdnet.com/article/in-latest-benchmark-test-of-ai-its-mostly-nvidia-competing-against-nvidia/>

**MORE DATA AND  
BETTER / FASTER  
INFRASTRUCTURE**





"With great power comes great responsibility"

-Uncle Ben, Spider Man

# WORKING TOGETHER TO BUILD THE FOUNDATION FOR RESPONSIBLE GENERATIVE AI

## Governments

- Regulations on Privacy, Rights, IP, and transparency/explainability
- Improved Security and Resiliency of AI Infrastructure
- Impacts on crucial areas – from National Security to Human Workforce and Threats to Democracy

## Standard Bodies

- Cross-Border interoperability and harmonization of regulations, regulatory approaches and instruments
- Common framework and KPIs for AI risk assessment
- Standardized measurement of AI risks and public disclosure
- Certifications on Responsible AI



## Technology Providers

- Transparency of training data
- Security, Privacy and Safety Monitoring while in use
- Clear framework to assess associated risk
- Controlled Availability/Accessibility

## Businesses/ Organizations

- Rethink how to best use Generative AI responsibly throughout the organization
- Manage the risk to business
- Implement Responsible AI practice
  - Organization/Governance (incl. establishing a review board)
  - Process (incl. auditing)
  - People (incl. training)
  - Technology

## Individual Citizens

- Actively manage personal data
- Be selective on which business to work with
- Relearn what can be trust – be vigilant of deepfakes incl. voice & video

\*The broader aspect of responsible AI is still applicable here. This illustration mostly focuses on Generative AI



# THANK YOU

## Contact:

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[www.linkedin.com/in/lisaoconnor](https://www.linkedin.com/in/lisaoconnor)

