Artificial Intelligence:
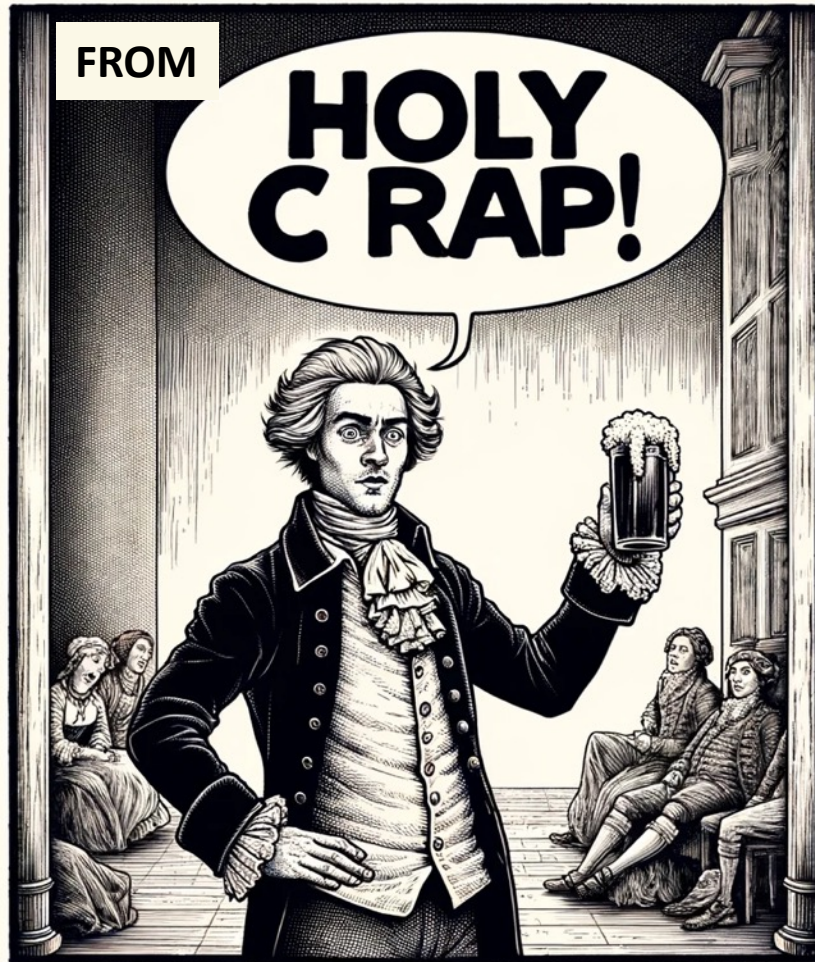

R. David Lankes | Bowden Professor of Librarianship | University of Texas Austin

The Hype

The Basics
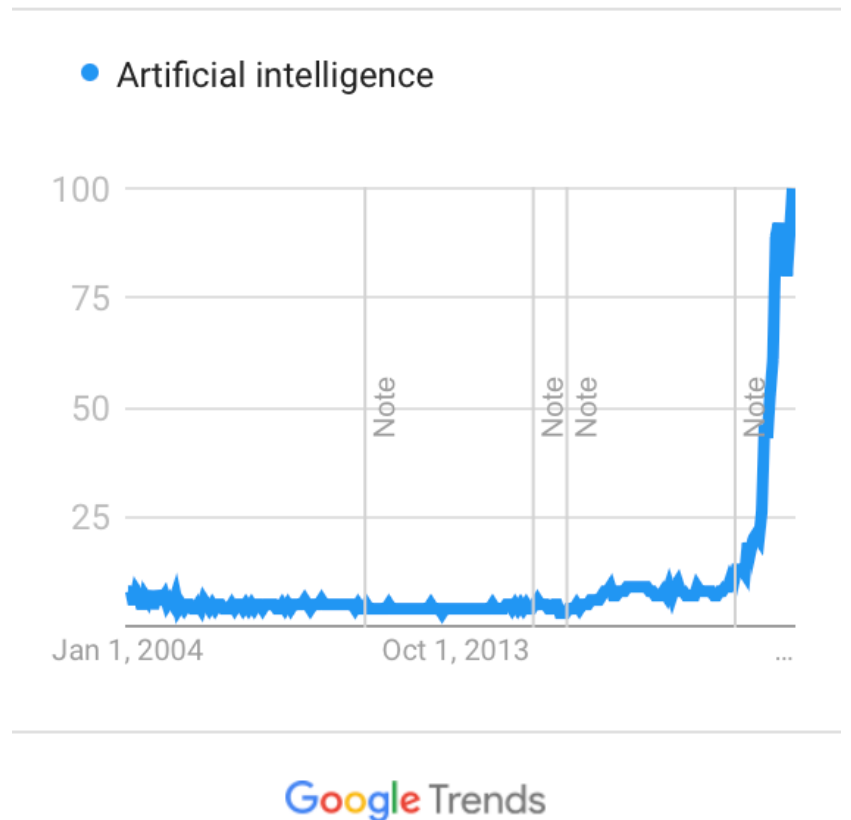
The Issues

The Use

If we have time, show and tell

What's the Hype Around AI?

- Data source: Google Trends (https://www.google.com/trends)

Hype Cycle for Artificial Intelligence, 2023

Expectations (y-axis)

Time (x-axis)

Phases:
- Innovation Trigger
- Peak of Inflated Expectations
- Trough of Disillusionment
- Slope of Enlightenment
- Plateau of Productivity

Labels on curve:
- Smart Robots
- Generative AI
- Responsible AI
- Neuromorphic Computing
- Prompt Engineering
- Foundation Models
- Artificial General Intelligence
- Decision Intelligence
- AI TRiSM
- Operational AI Systems
- Composite AI
- Data-Centric AI
- AI Engineering
- AI Simulation
- Causal AI
- Neuro-Symbolic AI
- Multiagent Systems
- First-Principles AI
- Automatic Systems
- Synthetic Data
- ModelOps
- EdgeAI
- Knowledge Graphs
- AI Maker and Teaching Kits
- Autonomous Vehicles
- Cloud AI Services
- Data Labeling and Annotation
- Intelligent Applications
- Computer Vision

Plateau will be reached:

- ○ less than 2 years
- ● 2 to 5 years
- ● 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau

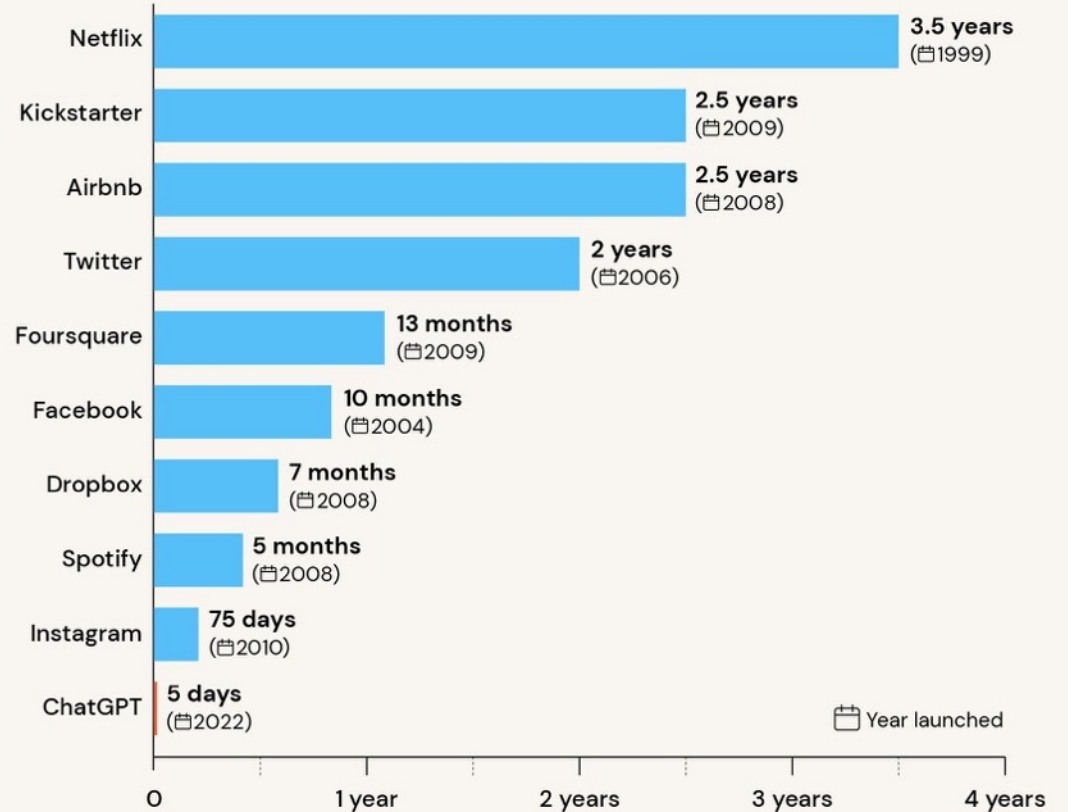As of July 2023

gartner.com

Gartner®

Generative AI

- Text (large language models)
- Images (AI art, e.g., DALL-E)
- Video (synthetic video)
- Music (AI-generated music)
- Code (code-generation)
- Molecules (molecular discovery)
- Robotics (learn tasks)

CHATGPT STATISTICS
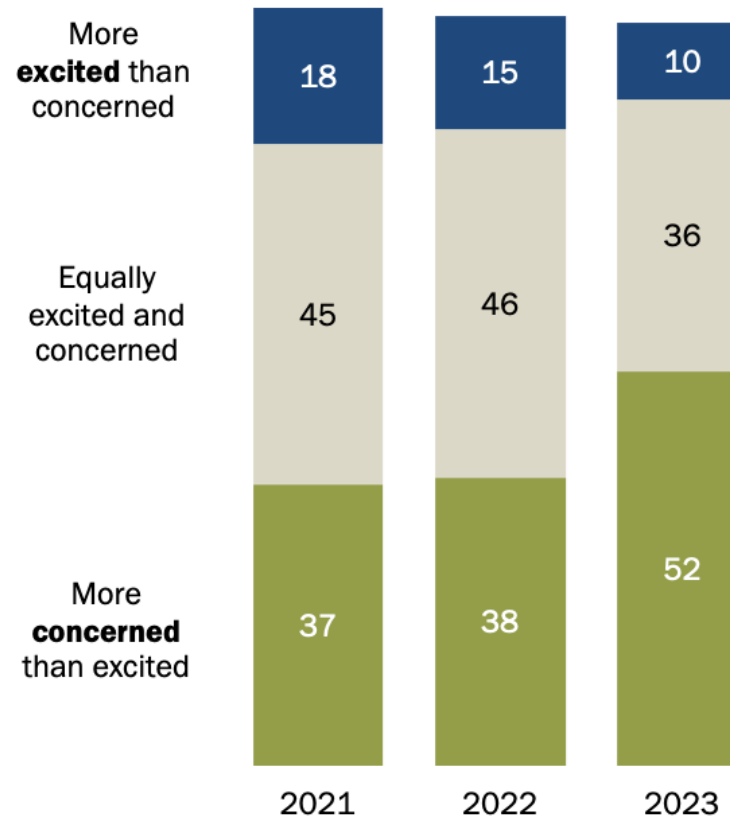
Time to reach 1 million users

Netflix	3.5 years (1999)
Kickstarter	2.5 years (2009)
Airbnb	2.5 years (2008)
Twitter	2 years (2006)
Foursquare	13 months (2009)
Facebook	10 months (2004)
Dropbox	7 months (2008)
Spotify	5 months (2008)
Instagram	75 days (2010)
ChatGPT	5 days (2022)

Year launched

0   1 year   2 years   3 years   4 years

Read the full report at tooltester.com/en/blog/chatgpt-statistics

tooltester

Public Trust Is an Issue...

and It Is Getting Worse...

Concern about artificial intelligence in daily life far outweighs excitement

% of U.S. adults who say the increased use of artificial intelligence in daily life makes them feel ...

	2021	2022	2023
More **excited** than concerned	18	15	10
Equally excited and concerned	45	46	36
More **concerned** than excited	37	38	52

Note: Respondents who did not give an answer are not shown.
Source: Survey conducted July 31-Aug. 6, 2023.

PEW RESEARCH CENTER

Most Americans Believe AI Will Decrease the Number of Jobs in the U.S.

In your opinion, what type of effect will artificial intelligence have on the total number of jobs in the United States in the next 10 years?

	Increase the total number of jobs %	Have no impact on the total number of jobs %	Reduce the total number of jobs %
U.S. adults	6	19	75

https://news.gallup.com/opinion/gallup/510635/three-four-americans-believe-reduce-jobs.aspx
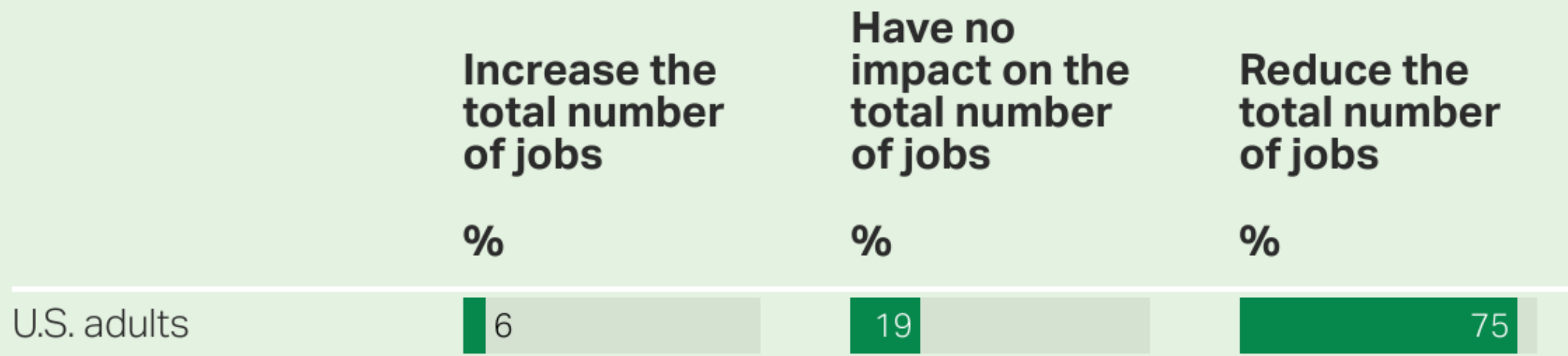
The Future of Jobs Report 2020

OCTOBER 2020

- According to the **World Economic Forum's "The Future of Jobs Report 2020",** 85 million jobs globally will be replaced by AI by 2025. [The same report also indicates that AI can potentially generate 97 million new roles](#).

- https://www.forbes.com/sites/kalinabryant/2023/05/31/how-ai-will-impact-the-next-generation-workforce/

What is Artificial Intelligence (AI)?

- "engineered or machine-based system that can, for a given set of objectives, generate outputs such as predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy" (National Institute on Standards and Technology, 2023)
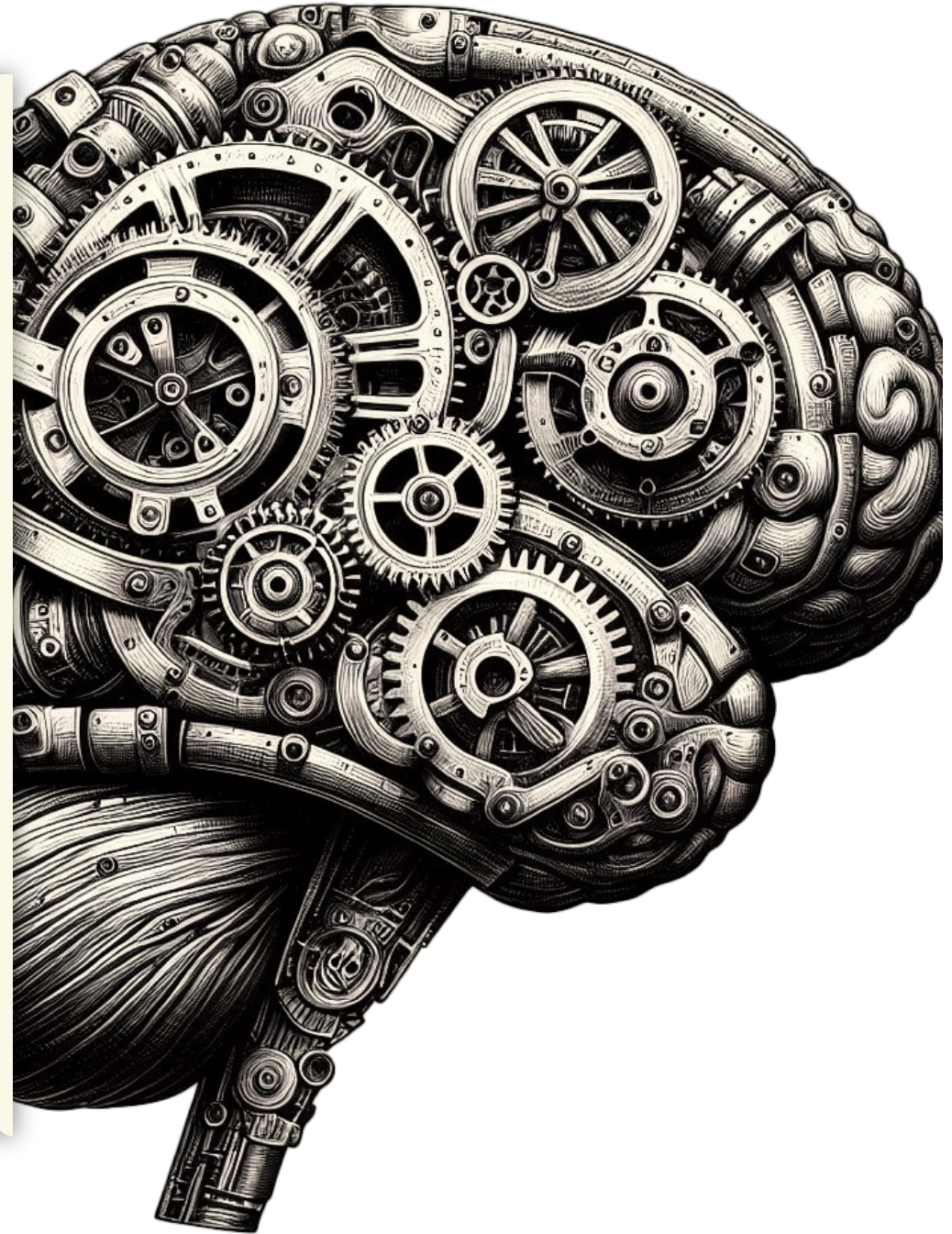
AI is Here

- Music (Spotify)

- Search (Google)

- Fitness (Apple Watch)

- Cars (Intelligent Cruise Control)

- Toll Systems (Congestion Pricing in New York)

- Publishing (Amazon and Lit Journals)

- Productivity (Office, Google Docs)

- **Knowledge Infrastructure as Chimera**

Levels of AI

- **Level 1 - Rule-Based Systems:**
  - These are basic AI systems that follow predefined rules and logic. They are capable of performing specific tasks where the rules are clearly defined, like simple chatbots or basic decision-making algorithms.

- **Level 2 - Machine Learning:**
  - At this level, AI systems learn from data. They are not just following predefined rules but can adapt based on the data they are trained on. This includes things like recommendation systems, more advanced chatbots, and image recognition software.

- **Level 3 - Advanced Machine Learning:**
  - This involves more complex algorithms, such as deep learning, that can handle tasks like natural language processing, complex image and speech recognition, and predictive analytics.

- **Level 4 - Autonomy:**
  - AI at this level can make decisions and perform tasks with a high degree of autonomy. This is where you find self-driving cars, autonomous drones, and advanced robotics.

- **Level 5 - Artificial General Intelligence (AGI):**
  - This is a theoretical level where AI would have cognitive abilities comparable to humans, capable of understanding and learning any intellectual task that a human being can.

- **Level 6 - Superintelligence:**
  - Beyond AGI, this is a hypothetical scenario where AI surpasses human intelligence in all aspects – problem-solving, creativity, and even social intelligence.
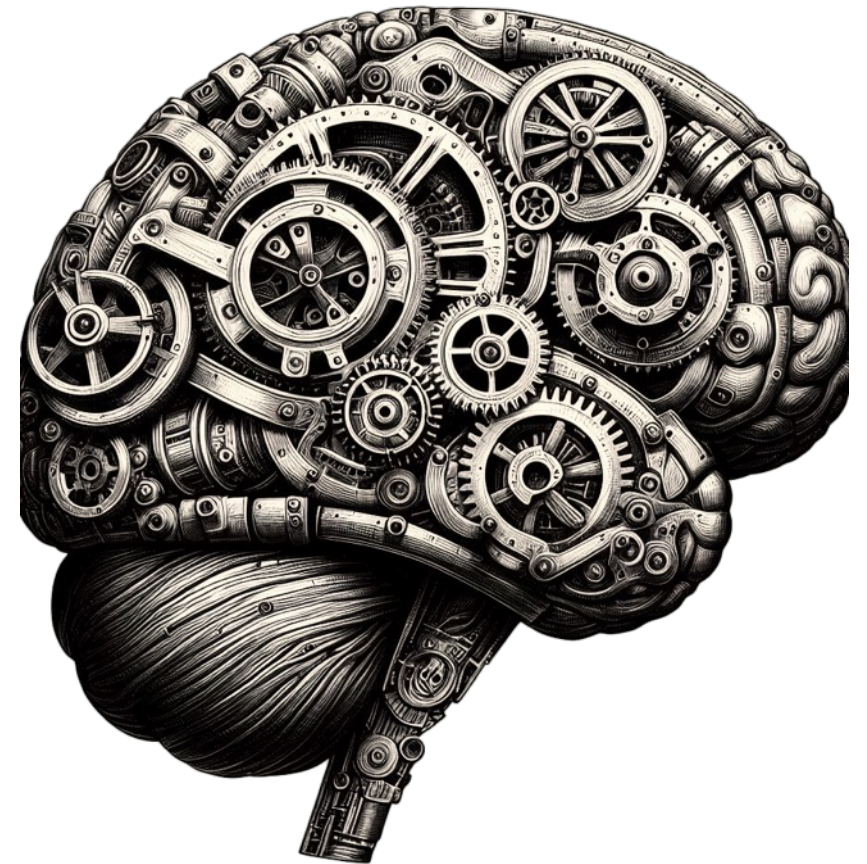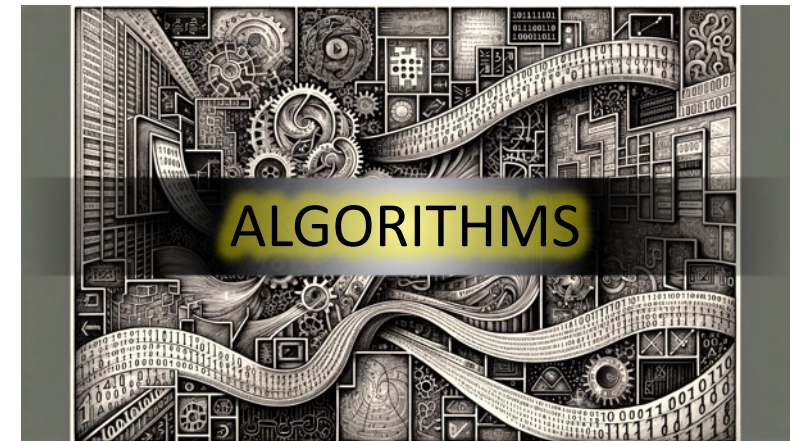
"Make a 6 wedge pie chat with a mechanical brain framed with a circular frame at the center. Each wedge must be the same size."
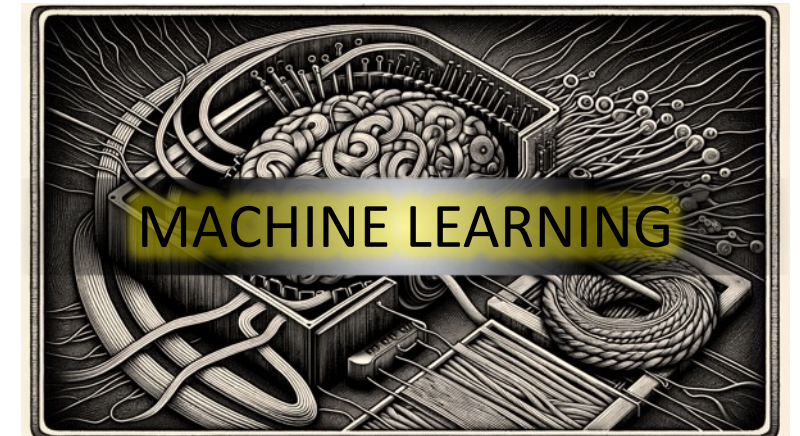
Muddled Vocabulary

Function: Diverse Data Sets, Privacy, Intellectual Property, Data Stewards, Data Hygiene, Ontological Development
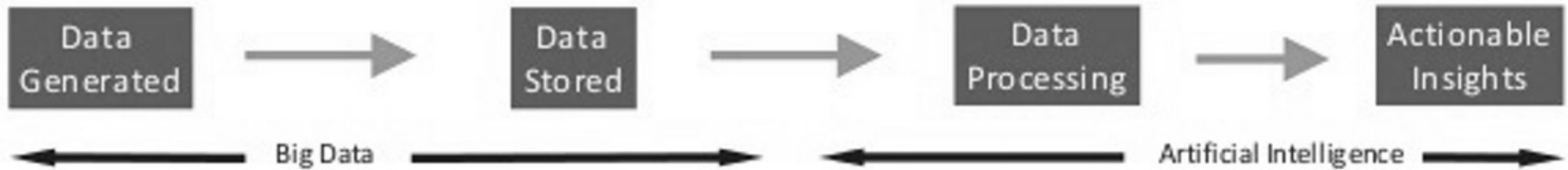**Skill**: Data literacy, Ontology/Taxonomy, Policy, Research Skills

Function: ADVOCACY for Explainable AI
Skill: Facilitation, Community Engagement

Function: Training, Hallucinations, Diverse Test Sets, Evaluation, Transparency
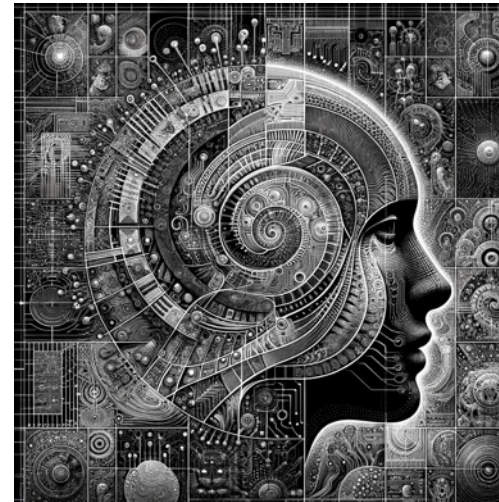**Skill**: Project Management, Assessment

The Process

Big Data → Artificial Intelligence

| Data Generated | Data Stored | Data Processing | Actionable Insights |

Structure and unstructured data
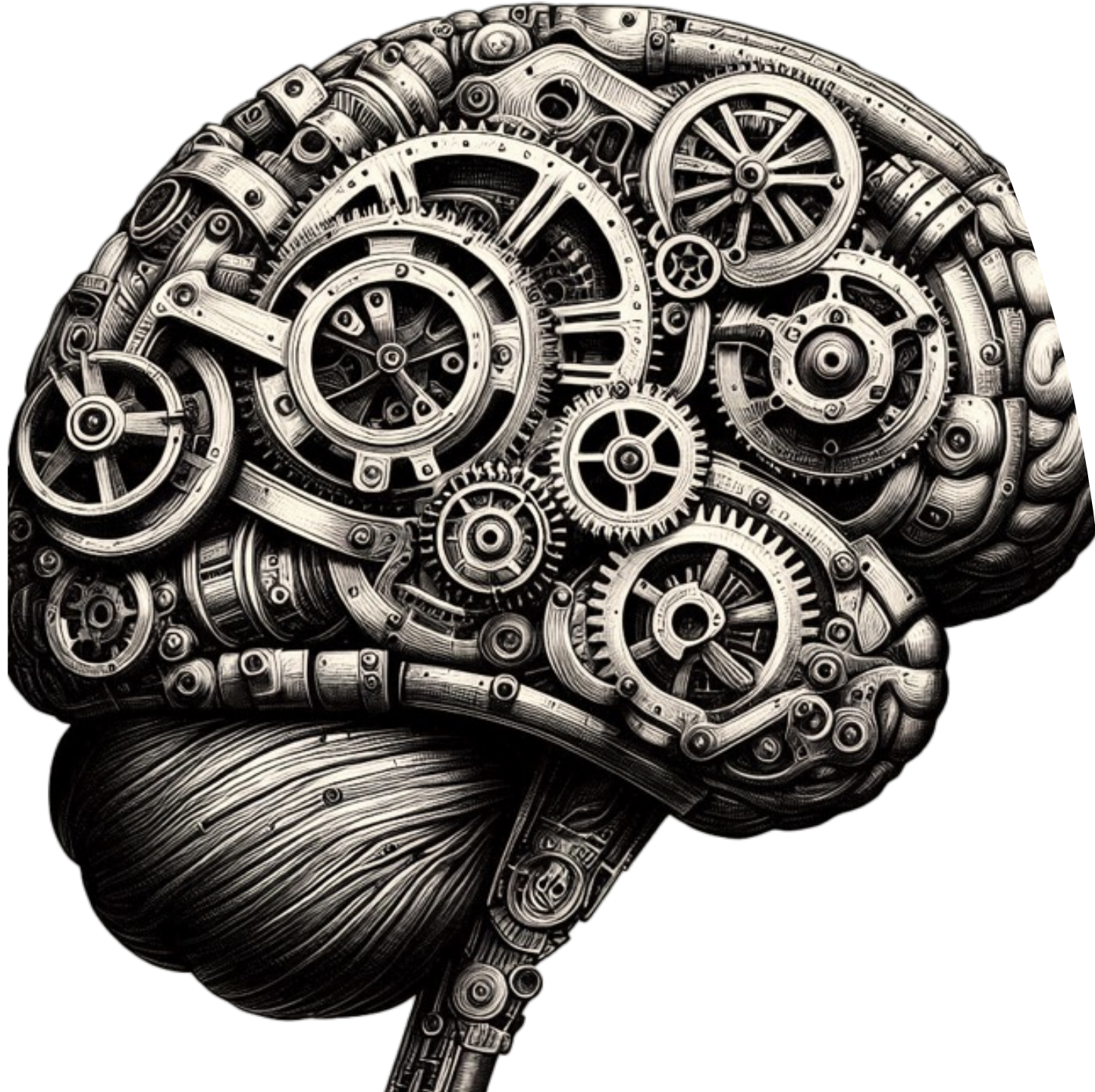
Data stored in databases and servers

Process the data using AI algorithms to detect patterns
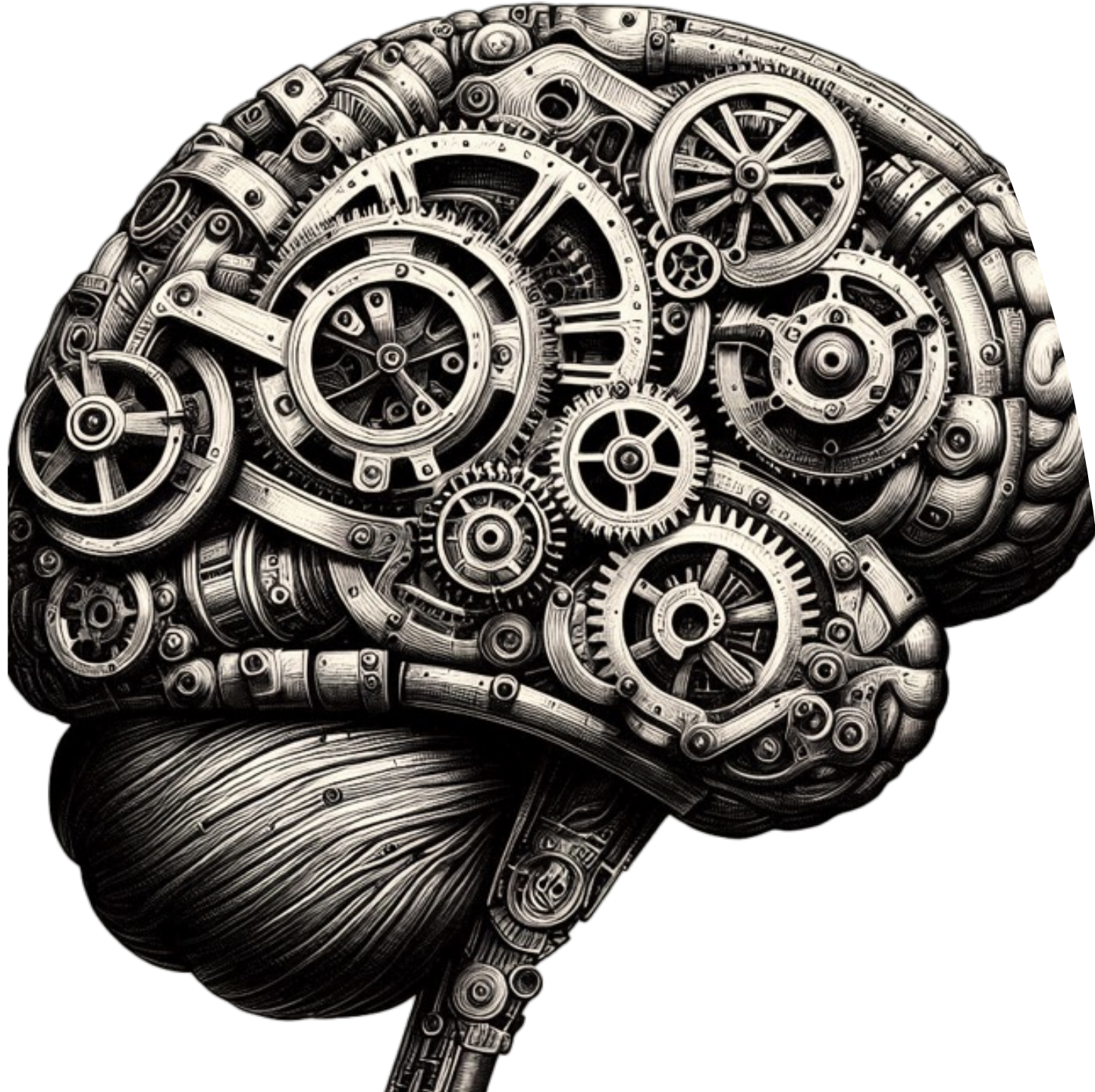
Predictive signals are generated

Final Terms

- Generative AI

- Large Language Models
  - ChatGPT 3.5, Llama, PaLM, LaMDA
  - In Bard, Gemini, Dall-E

- Ethical AI

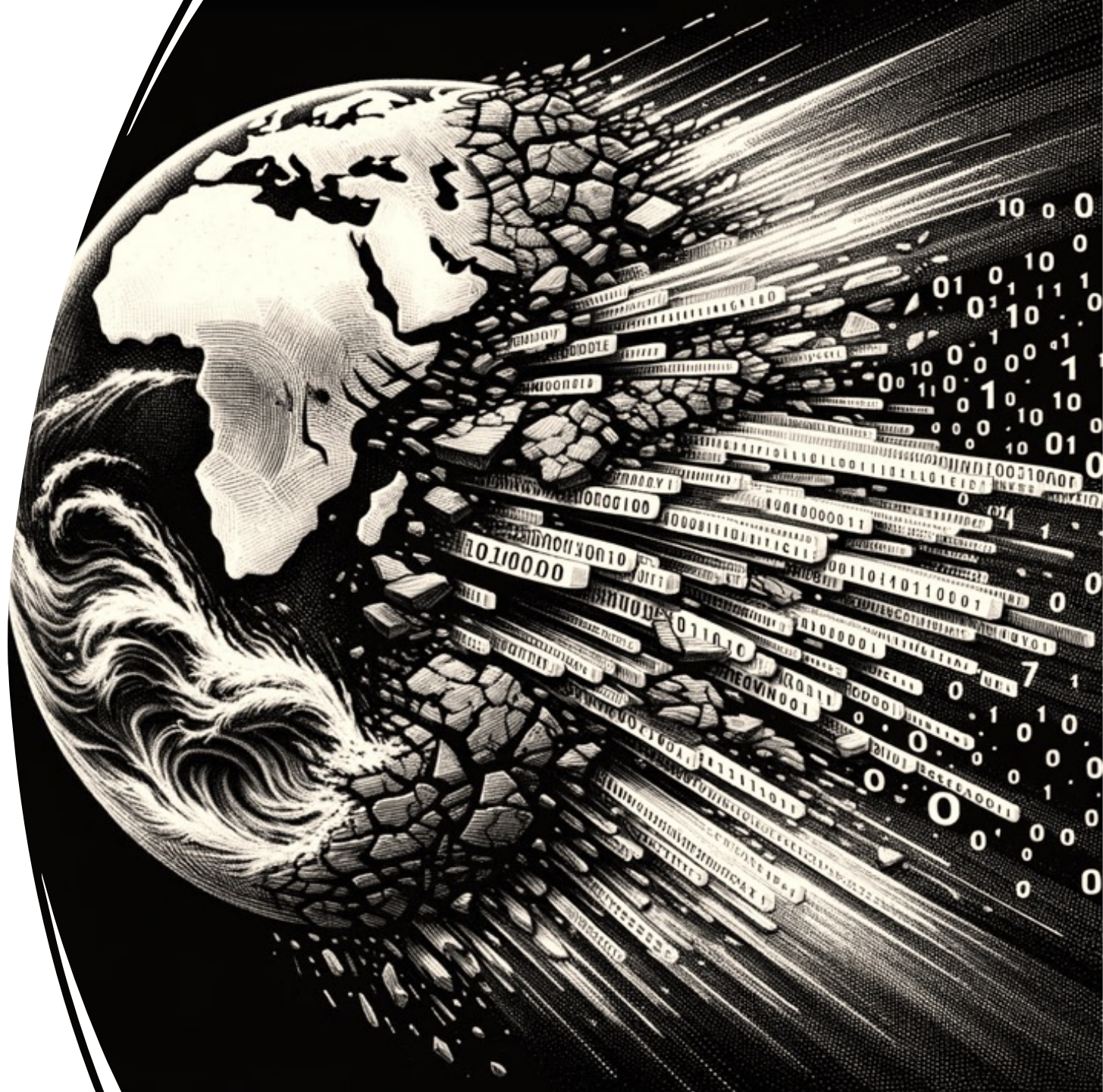- Machine Learning/Deep Learning

- Explainable AI

Final Terms

- Generative AI
- Ethical AI
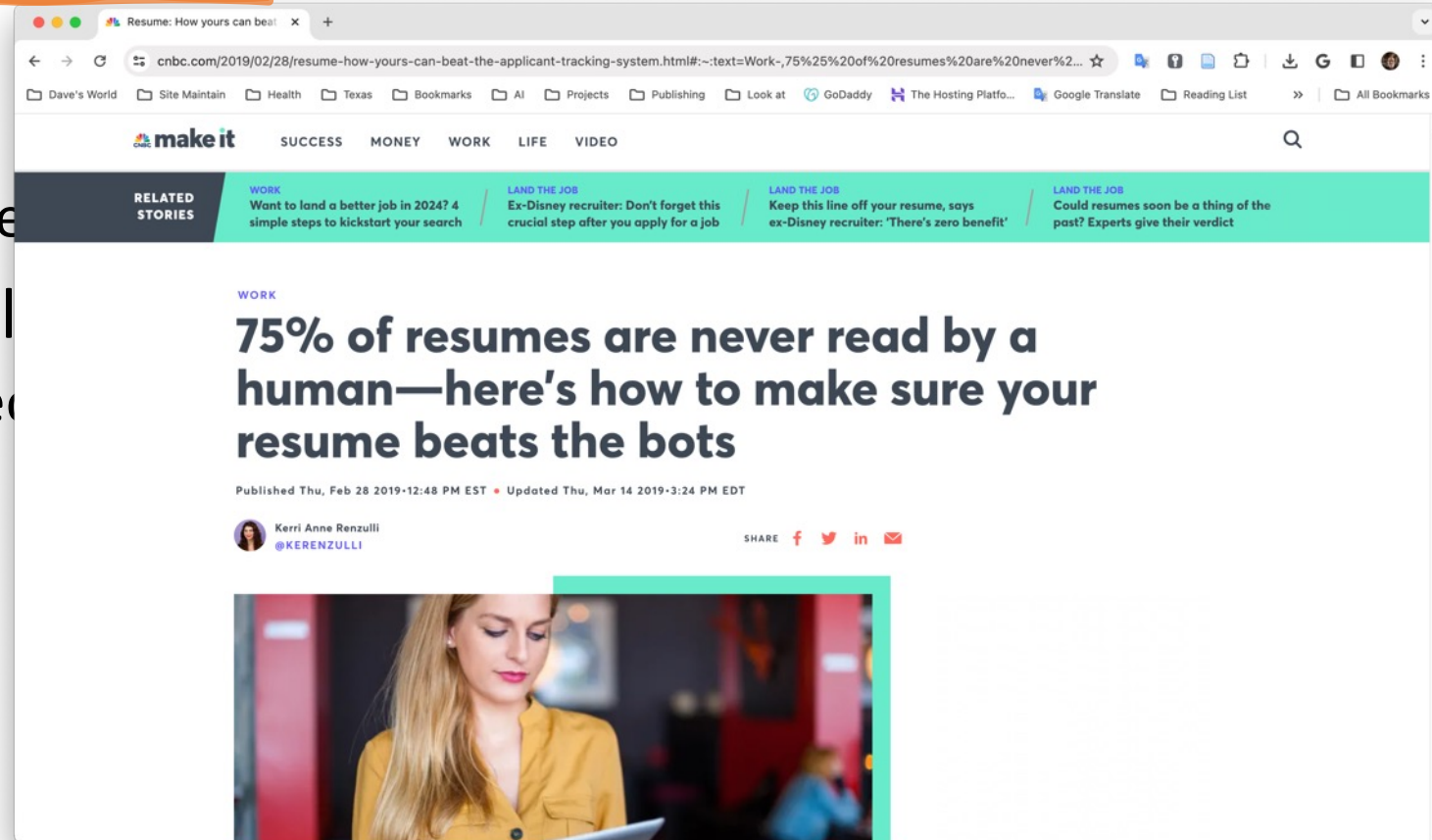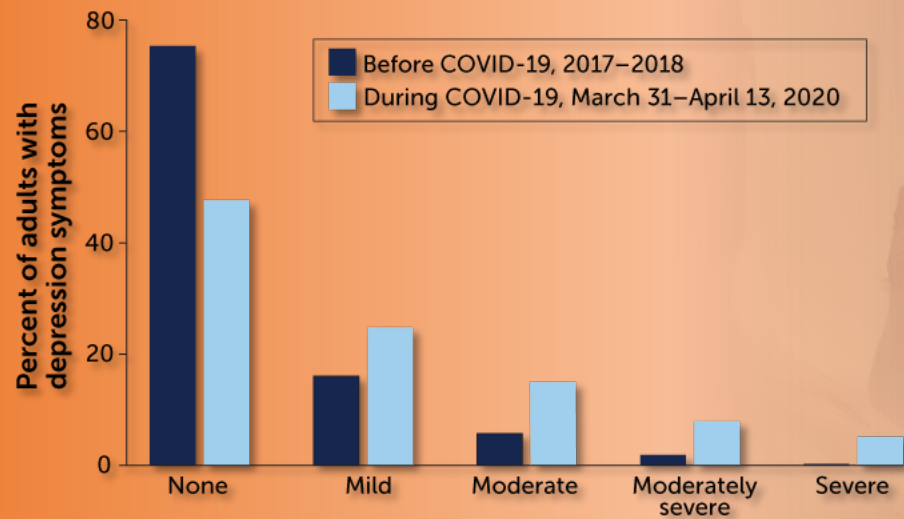- Machine Learning/Deep Learning
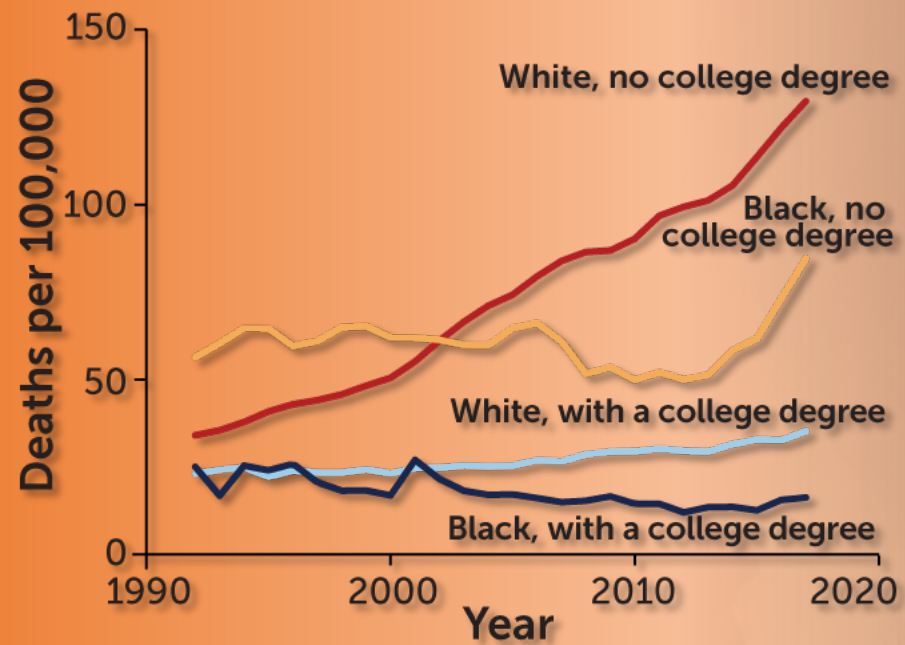- Explainable AI

The Issues

- Bias

- Theft or broken copyright?

- Image Errors and Hallucinations

- Environmental Impacts

- Cabal of Players with Big Installed Advantage

The Use

- Extending your work
  - Social media postings, marke
- Helping the Community Tell
  - Scripts to Narrations to Vide
- New Means of Interacting
  - Making a Chatbot (Poe.AI)
- Preparing the Community
  - Automated resume reading

Deaths per 100,000

- White, no college degree
- Black, no college degree
- White, with a college degree
- Black, with a college degree

150

100

50

0

1990   2000   2010   2020

Year

Percent of adults with depression symptoms

- Before COVID-19, 2017–2018
- During COVID-19, March 31–April 13, 2020

80

60

40

20

0

None   Mild   Moderate   Moderately severe   Severe

ScienceNews

https://www.sciencenews.org/article/deaths-of-despair-depression-mental-health-covid-19-pandemic

Slides and More at https://DavidLankes.org

Scan for AI Related Talks