AI in Human Subjects Research/ Research Misconduct
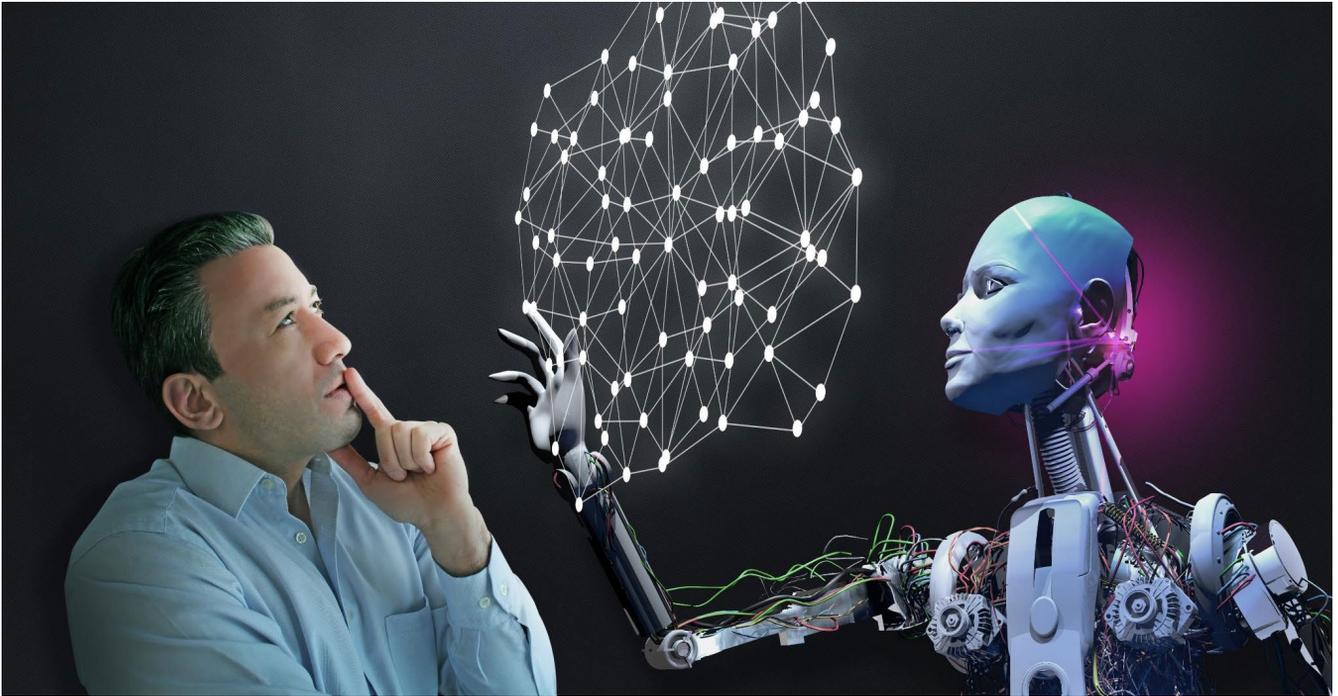
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What are the mind-numbing things that consume your day?

Generative artificial intelligence is to **repetitive intellectual tasks** as robotics is to **repetitive physical tasks**

Tools like ChatGPT and such are **like a toddler** with access to the total corpus of all digitized human textual content.

At the end of the day, generative AI is not "intelligence"…
it is **probability generation** on a massive scale.

How Does AI Learn and Make Decisions?

Analyze data for patterns and relationships and improves the analysis by optimizing itself

(e.g., image creation or text generation)

1. Data Collection
2. Data Preprocessing
3. Feature Extraction
4. Algorithm Selection
5. Training
6. Evaluation
7. Decision Making
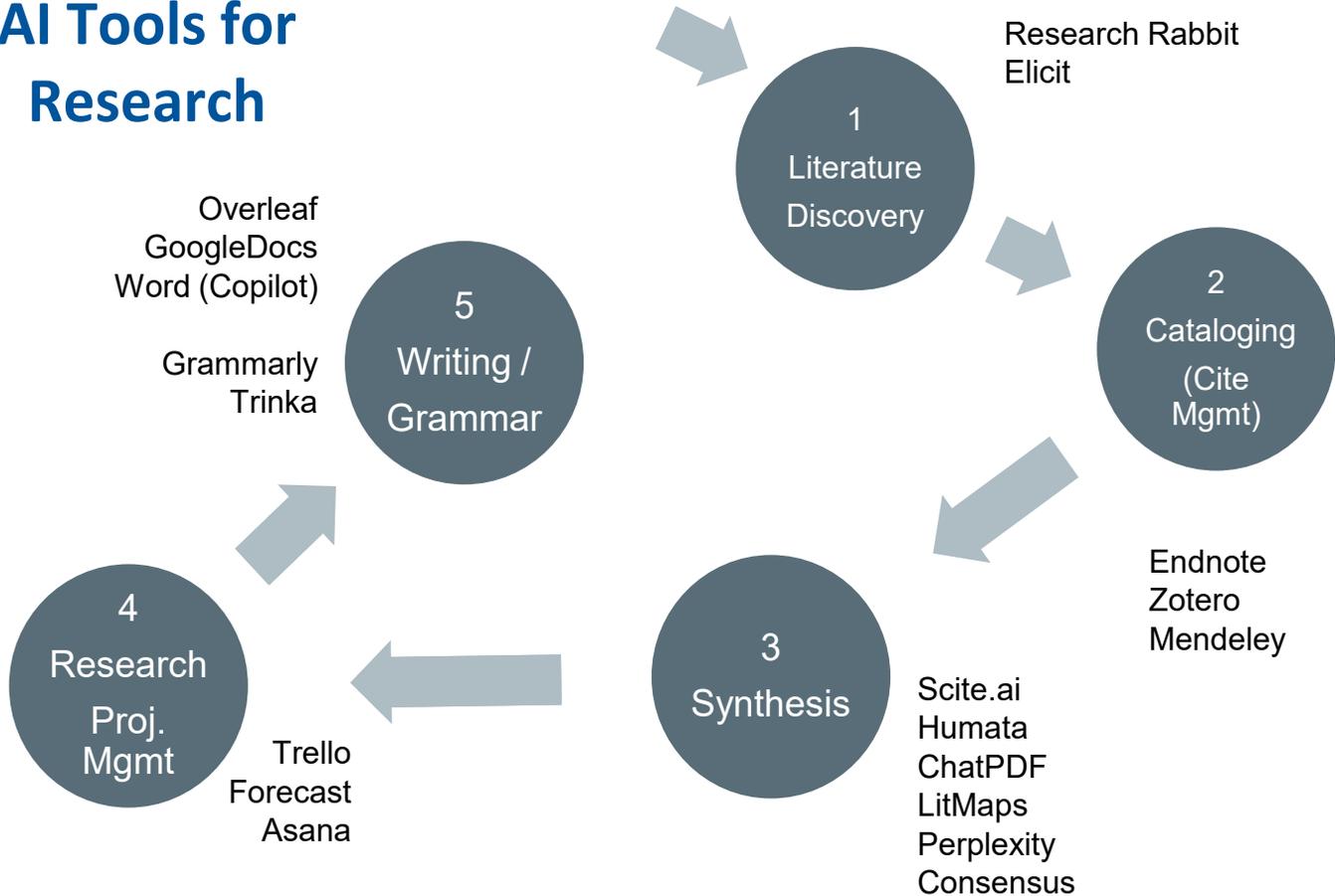8. Feedback Loop

SRA
INTERNATIONAL

Examples in Everyday Life

- Virtual Assistants
  - (Alexa, Siri, Google)
- Online Shopping
  - (Amazon, eBay, Netflix)
- Social Media Algorithms
  - (FB, Instagram, TikTok)
- Language Translation
  - (Google Translate, Microsoft Translator)
- Spam Filtering
  - (Gmail, Outlook)

- Healthcare Diagnosis
  - (X-rays, MRI)
- Autonomous Vehicles
  - (Tesla, Uber)
- Smart Home Devices
  - (thermostats, cameras, doorbells)
- Voice/Image Recognition
  - (speech to text)
- Fraud Detection
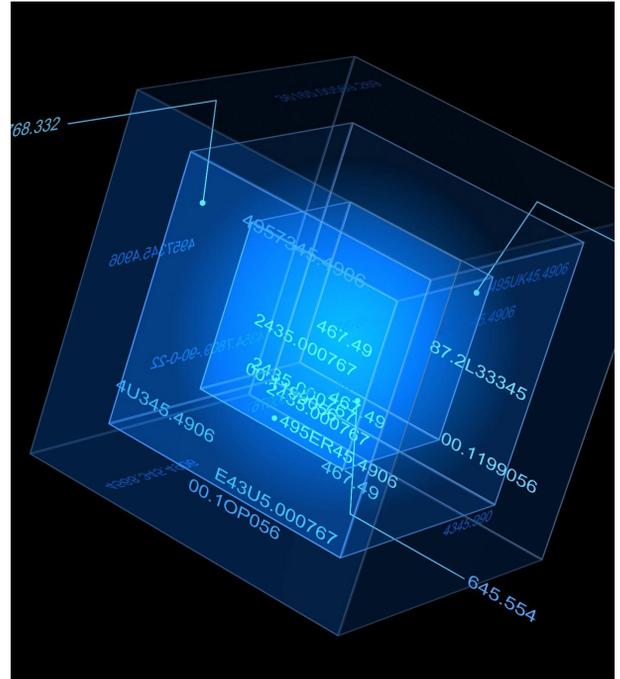 - (Banks, credit bureaus)

Federal Agency Perspectives*

*caveats...

AI Tools for Research

1
Literature Discovery

Research Rabbit
Elicit

2
Cataloging (Cite Mgmt)

Endnote
Zotero
Mendeley

3
Synthesis

Scite.ai
Humata
ChatPDF
LitMaps
Perplexity
Consensus

4
Research Proj. Mgmt

Trello
Forecast
Asana

5
Writing / Grammar

Overleaf
GoogleDocs
Word (Copilot)

Grammarly
Trinka

Privatized Institutional AI Tools...

Potential Applications in Human Subjects

- Automated Screening

- Informed Consent

- Data Privacy & Security Audits

- Bias Detection

- Emails & Meetings

- Historical Data Analysis

- Decision Support Systems

Risks...

- Algorithmic Bias
- Lack of Transparency
- Over-reliance on AI
- Data privacy concerns
- Ethical accountability
- Inadequate training data
- Infringement on human dignity
- Legal and regulatory issues
- Erosion of human judgement

Thank you & Questions

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