

Understanding Artificial Intelligence

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Special Advisor on Artificial Intelligence

Oregon State University Libraries

Newport Public Library – August 16, 2025



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Background by Pixabay user harishs

Dr. Kiri Wagstaff

- Grew up in Castle Valley, UT
- Computer Science, AI, Machine Learning (Ph.D.)
 - Geology (M.S.), Library and Information Science (MLIS)
- NASA Jet Propulsion Laboratory (2003 – 2022)
 - Machine learning for space exploration
 - Mars rover operations (Opportunity rover)
- Oregon State University since 2019
 - “Machine Learning Challenges in the Real World” course
 - AI Advisor to U.S. Senator Mark Kelly (2023-2024)
 - Special Advisor on AI for the OSU Libraries
 - OSU AI Literacy Center



Mars Desert Research Station



U.S. Congress

AI in the News

EA El Adelantado de Segovia

Goodbye to job security at Amazon—its CEO warns that artificial intelligence will put thousands of jobs at risk in the coming years



Jobs

NY The New York Times

A.I. Computing Power Is Splitting the World Into Haves and Have-Nots



Equity

PT Psychology Today

How to recognize AI “hallucinations.”



Trust

N Newsweek

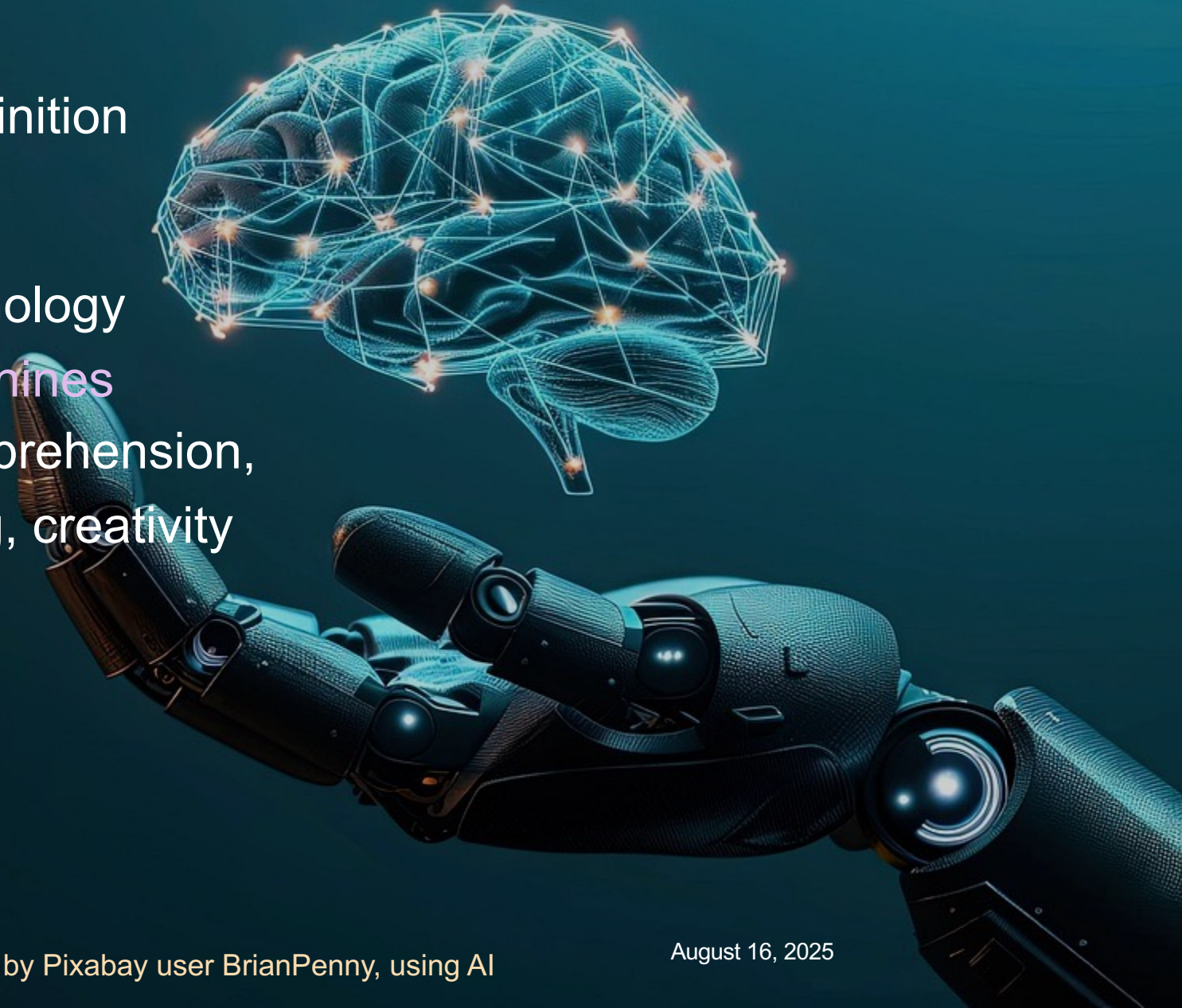
Is Artificial Intelligence Dumbing Down Cancer Doctors?



Health

What is AI?

- There is no widely agreed-on definition
- “Artificial intelligence (AI) is technology that enables computers and machines to **simulate** human learning, comprehension, problem solving, decision making, creativity and autonomy.” – IBM



Artificial Intelligence

Search and plan

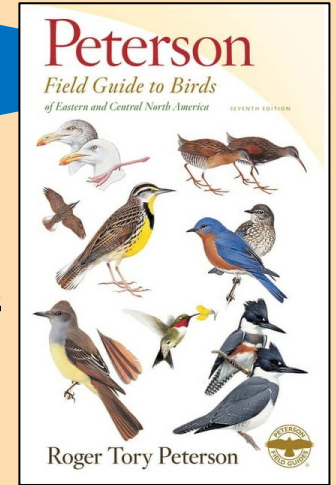


Generate driving directions
by consulting a map

Predict

Identify birds
by consulting a guidebook

- Check beak shape, crest, coloring...



Artificial Intelligence

Search and plan

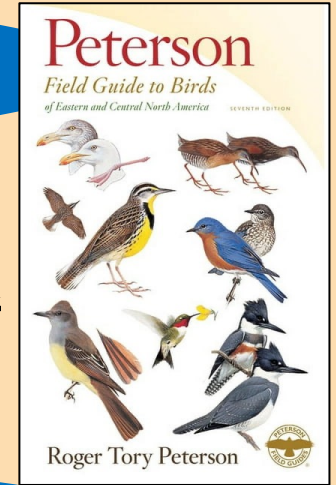
Generate driving directions by consulting a map



Predict

Identify birds by consulting a guidebook

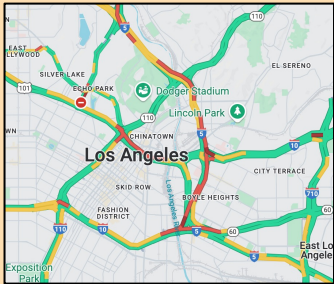
- Check beak shape, crest, coloring...



Machine learning

Search, plan, and predict using data
(When we can't write down all the information)

Generate driving directions using current traffic



Identify birds using example images



Kingfisher
(Photographer: taligar)



Heron
(Photographer: ambquinn)

Example: AI and ML for games

- Atris – a Tetris-like game with AI players
 - Hand-written scoring functions that guide AI search
 - Lightning: make decisions quickly to get next piece
 - Double-Think: take time to look ahead for best move
 - AI players playing against each other (static)

AI



Example: AI and ML for games

AI

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ML

- AlphaGo – an AI model that plays Go
 - Machine-learned scoring function that guides AI search
 - Maybe we don't know a good Go scoring function!
 - Trained on 30M recorded game moves, then played against itself to improve (dynamic) ↻



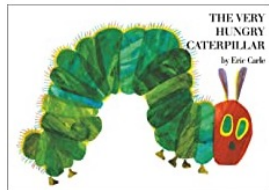
Where does the data for ML come from?

Shopping
recommendations

Frequently bought together



+



Total price: **\$17.30**

Total Points: **36 pt**

Add both to Cart

✓ **This item:** The Giving Tree by Shel Silverstein Hardcover **\$10.74 22 pts**

✓ The Very Hungry Caterpillar by Eric Carle Board book **\$6.56 14 pts**

Every purchase informs the model

Personalized book, movie, etc.
recommendations

goodreads Home My Books Browse Community Search books

The Giving Tree by Shel Silverstein

Read

Buy on Amazon

★★★★★ Rated. [Write a review](#)

Readers also enjoyed

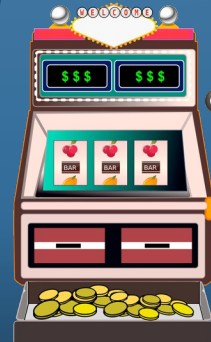
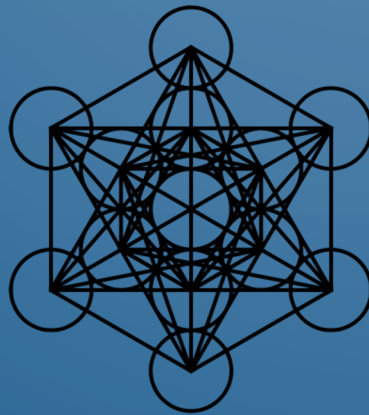
- Where the Wild Things Are** by Maurice Sendak
★ 4.24 · 962k
- Charlotte's Web** by E.B. White
★ 4.19 · 2m
- Green Eggs and Ham** by Dr. Seuss
★ 4.3 · 734k

Every rating informs the model

We all use (and help train) machine learning models

What is generative AI?

- “Generative” because it generates new data (text, image, music, etc.)
 - Learn probabilities from previous data and create new outputs
- “Large language model” = Generative model learned from (a lot of) text



Fill in the blank

“The cat sat on the _____.”



Possibly:

mat, hat, chair...

Unlikely:

xylophone, dream, golf...

What is AI literacy?

- “The essential knowledge and skills needed to **understand**, **interact** with, and **critically assess** AI technologies. AI literacy includes the ability to use AI tools effectively and ethically, evaluate their output, ensure humans are at the core of AI, and adapt to the evolving AI landscape in both personal and professional settings.” – Digital Education Council (2025)
- Not just the ability to **use** AI, but also the ability to decide **whether** to use it
 - Need not assume that use of AI is “inevitable and desirable”
 - Demystify AI to enable informed decisions

(Dani Dilkes,
Western University)

Gaps in AI literacy cause harm

Air Canada Has to Honor a Refund Policy Its Chatbot Made Up

The airline tried to argue that it shouldn't be liable for anything its chatbot says.

Wired, February 2024

Gaps in AI literacy cause harm

Two US lawyers fined for submitting fake court citations from ChatGPT

Law firm also penalised after chatbot invented six legal cases that were then used in an aviation injury claim

“We made a good-faith mistake in failing to believe that a piece of technology could be making up cases out of whole cloth.”

The Guardian, June 23, 2023

Australian lawyer apologizes for AI-generated errors in murder case

A senior lawyer in Australia has apologized to a judge for using AI-generated fake quotes and non-existent case judgments in a murder case

“The lawyers explained they checked that the initial citations were accurate and wrongly assumed the others would also be correct.”

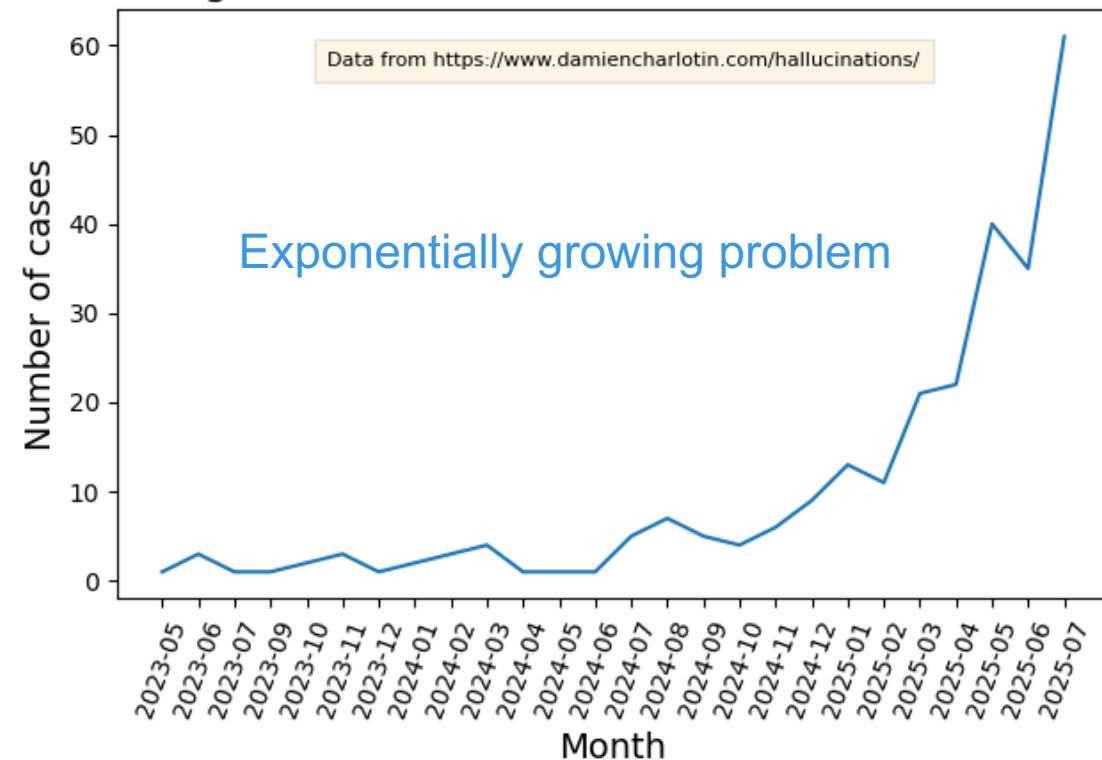
ABC News, August 14, 2025

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AI Hallucination Cases
(generative AI issues mentioned in legal decisions)
268 cases to date

<https://www.damiencharlotin.com/hallucinations/>

Legal decisions that mention AI hallucinations



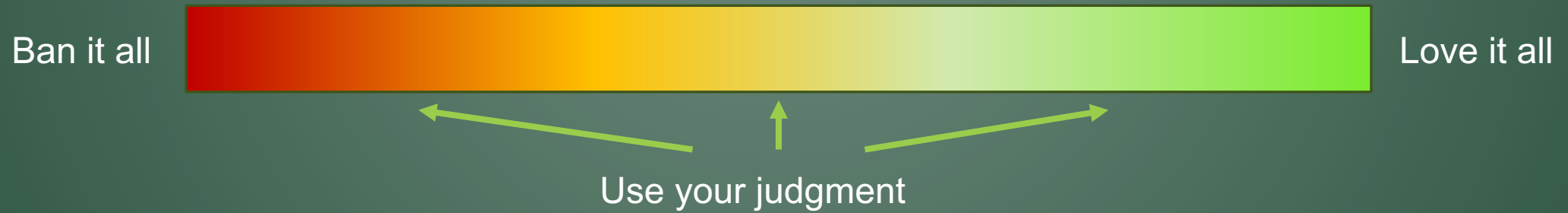
Three steps towards AI literacy

1. Decide when and where you want to use AI
2. Know your AI tools
(and how they compare to other information tools)
3. Set your expectations for generative AI



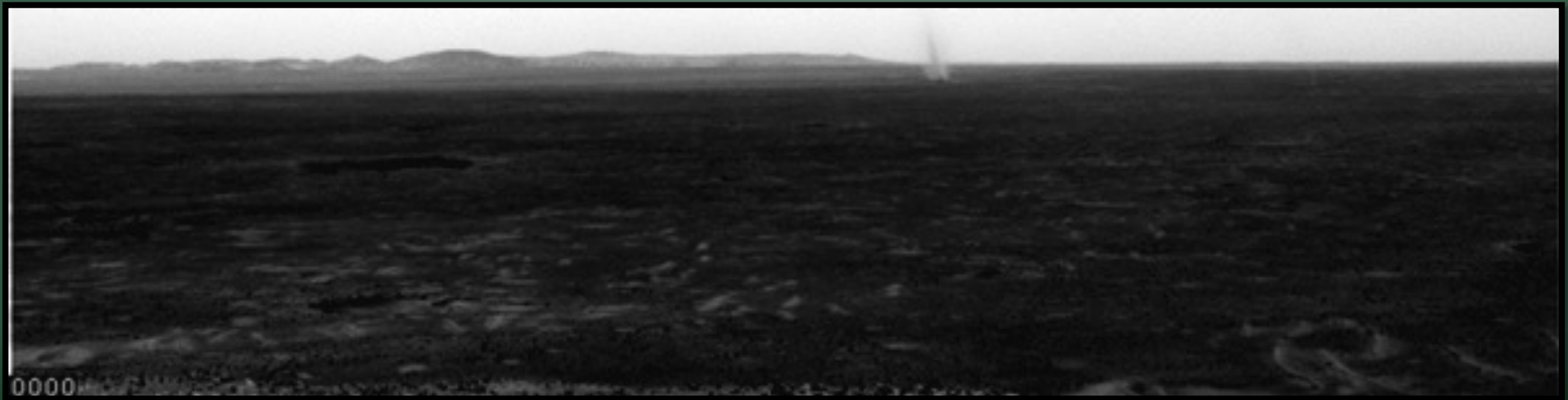
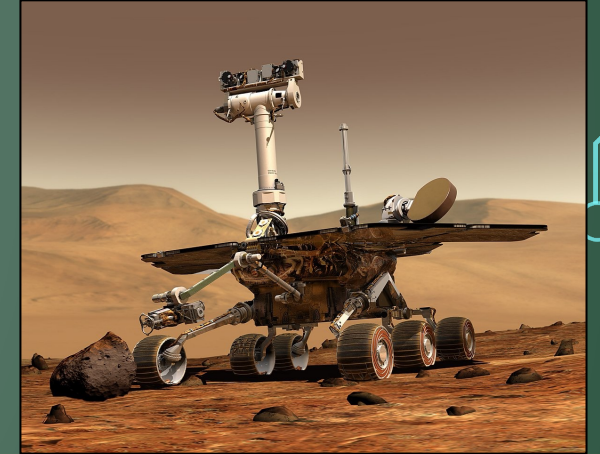
1. Decide when and where you want to use AI

- “... **critically assess** AI technologies.”



Use AI in places humans can't go

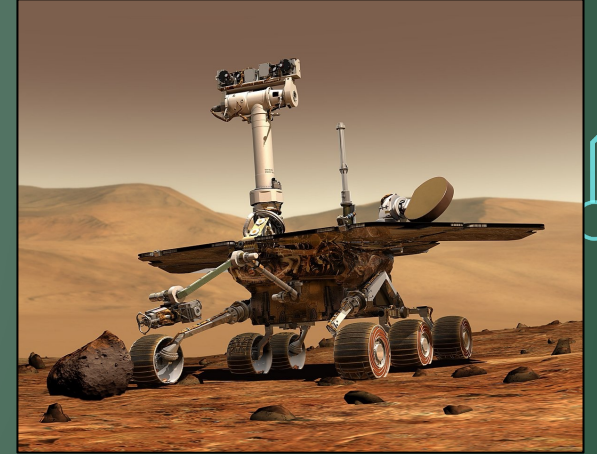
- A signal takes 20-40 minutes to go to Mars and back
- Meanwhile, exciting things are happening on Mars



Spirit Mars rover, Sol 568 (August 5, 2005) – Image credit NASA/JPL/Texas A&M

Use AI in places humans can't go

- A signal takes 20-40 minutes to go to Mars and back
- Meanwhile, exciting things are happening on Mars
 - Use AI to detect interesting events and capture data to send back to Earth – no other way to respond fast enough
 - Even so, we carefully weigh risks against benefits



A. Castaño et al., 2007. *Machine Vision Applications* 19:467-482.

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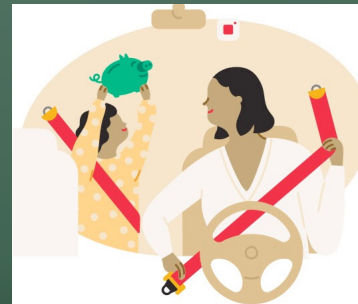
August 16, 2025

AI use in daily life: You choose

- What to watch / read / buy next: recommendations
 - Using your consumption history
- Unlock your phone, dictate messages
 - Using your face / fingerprint / voice
- Auto insurance discounts / “usage-based” insurance
 - Reward for sharing your driving activity / patterns



Progressive: [Snapshot](#)



State Farm: [Drive Safe & Save](#)



By Pixabay user prawnny

AI use in daily life: You choose

- Meeting transcription/summary in your doctor's office

 University of Alberta

AI scribe could help emergency docs save time and improve patient care



[University of Alberta](#) (Oct 23, 2024, updated May 20, 2025)

 Business Insider

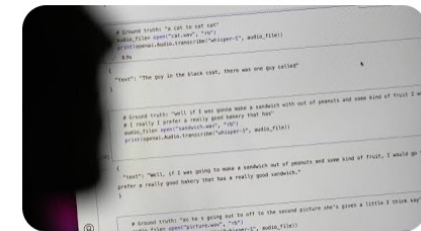
I'm a doctor who cautiously welcomes AI in medicine. It's helped me save hours on taking notes, but we need guardrails.



[Business Insider](#) (Sept. 25, 2024)

 AP News

Researchers say an AI-powered transcription tool used in hospitals invents things no one ever said



[AP News](#) (Oct. 26, 2024)

August 16, 2025


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By Pixabay user prawnpy

AI use in daily life: You choose

- Replace professionals with AI



Your AI Doctor Will See You Now

Hi, I'm Doctronic, your private and personal AI doctor. I've already helped people in **11,639,754 consults!** When we're done, you can have a video visit with a top doctor if you want for only \$39.

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By Pixabay user prawnny

2. Know your AI tools







What are its strengths and weaknesses?



What can I help with?

Message ChatGPT

Factual Creative Factual Creative Factual

 Summarize text  Help me write  Code  Make a plan  Get advice  More

By messaging ChatGPT, you agree to our [Terms](#) and have read our [Privacy Policy](#).

chat.openai.com

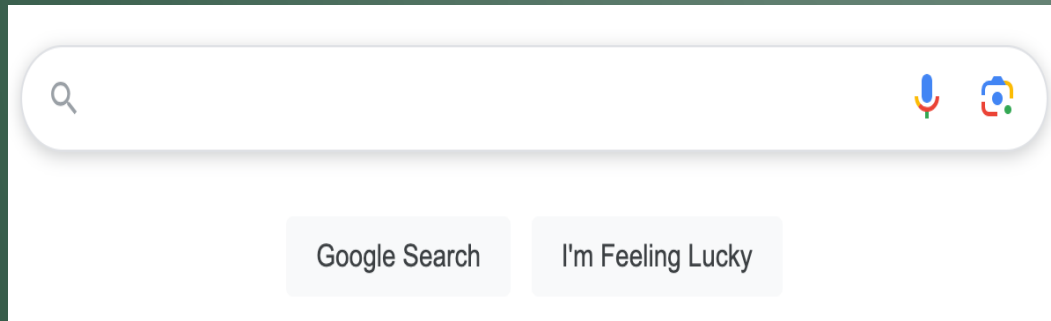
Tip: Use generative AI only when you have the skills to check the output

Example: When first learning to code Python, do you know enough to check it?
(Rebecca Hutchinson, OSU)

2. Know your AI (and other) tools

These tools look almost the same, but they aren't!

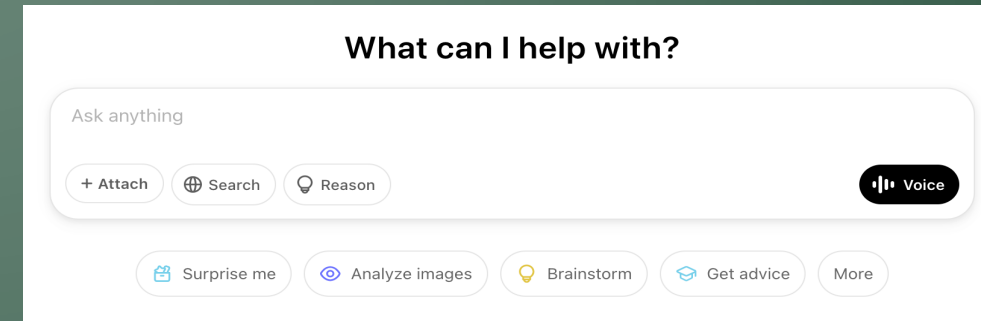
How can we make informed decisions?



Search engine - finds real matches



Detective



Generative AI (chatbot) - generates new content



Artist

Choose your tool to fit the task

3. Set your expectations for generative AI

- Don't expect truth or reality

- Generative AI learns from the data it is given, not from real-world experience
- It doesn't know the right answer. It knows a plausible answer.

- Avoid anthropomorphizing to avoid frustration

- Generative AI does not reason, analyze, deduce (or think)
- Generative AI is not sentient, does not have ethics or emotions

- Don't expect consistency

- Each output is based on a roll of the dice
- Any appearance of continuity is simulated

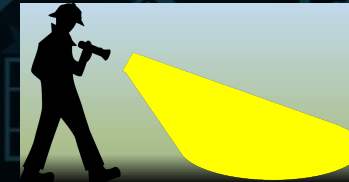
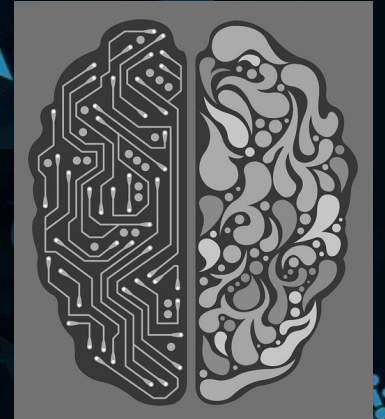
- ... but do have fun 😊 and let's keep learning as the technology changes!



Cindy Moore's art
inspired by *Into the Woods*

What We Need to Know about AI

- AI technology simulates human intellectual activities
 - Much of AI is powered by machine learning – trained on data
 - Generative AI creates new content based on patterns in previous data
- AI literacy: **understand**, **interact** with, and **critically assess** AI technologies
 1. Decide when and where you want to use AI
 2. Know your AI tools – help people understand search engine vs. AI chatbot
 3. Set your expectations for generative AI



or



Thank you!

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