Making Savvy Decisions about Artificial Intelligence in Education

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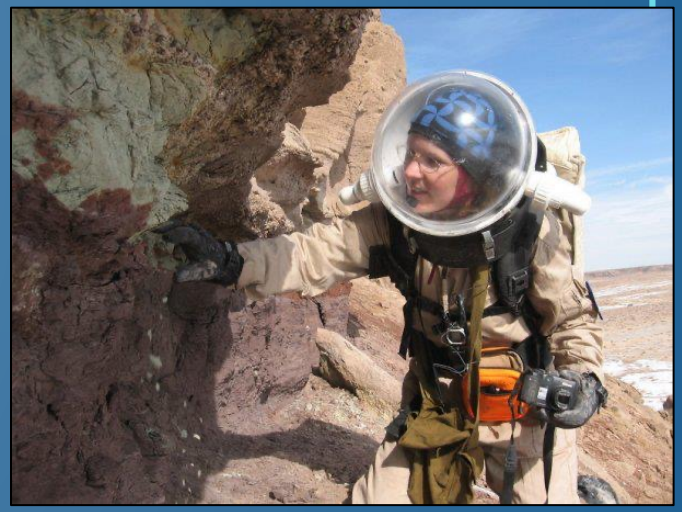
Background by harishs / Pixabay

Dr. Kiri Wagstaff

- Researcher – Ph.D. Computer Science
  - NASA Jet Propulsion Laboratory (2003 – 2022)
  - AI and machine learning for space exploration
  - Mars rover operations (Opportunity rover)
  - Fellow of the Assoc. for the Advancement of Artificial Intelligence (AAAI)
- Educator – Oregon State University since 2019
  - “Machine Learning Challenges in the Real World”
  - “How to Be Less Wrong: A Study in Common Misconceptions”
  - Special Advisor on AI for the OSU Libraries

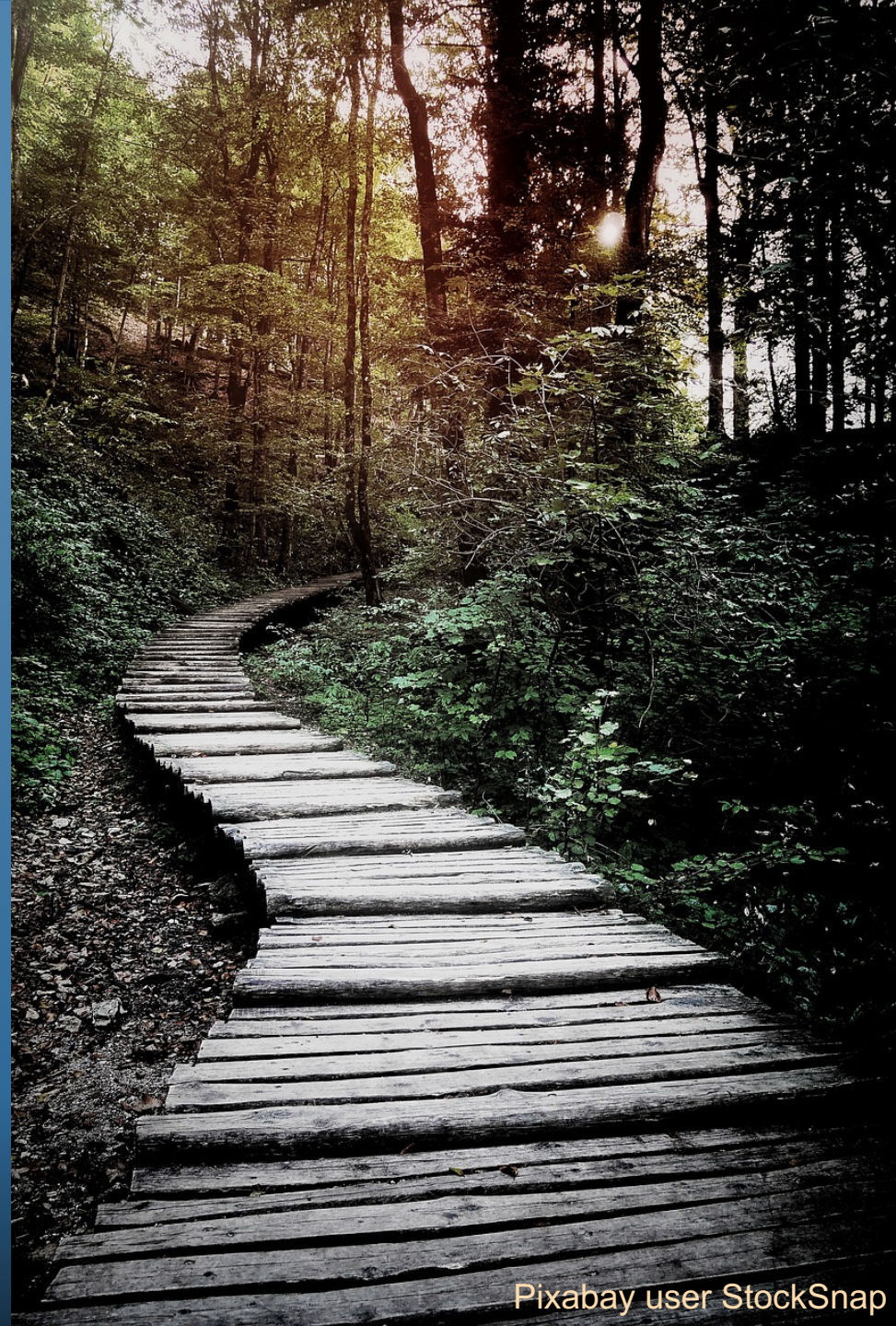


Mars Desert Research Station

U.S. Congress

Topics for today

1. Demystify – What exactly is AI?
2. Develop guidance – for us and our students
3. Discuss – your fears, hopes, and ideas

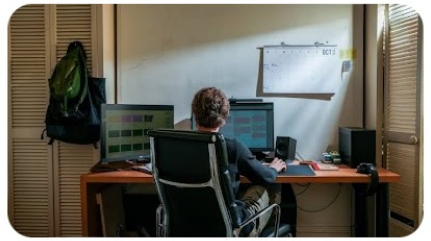


Pixabay user StockSnap

AI in the News

Australian Broadcasting Corporation

University caught out using AI to wrongly accuse students of cheating with AI



Trust

OECD

Leveraging artificial intelligence to support students with special education needs

Special needs

unesco.org

AI and the future of education. Disruptions, dilemmas and directions

Disruption

Verizon

Artificial Intelligence (AI) in Education: The Role of AI in Schools

Advertising

What is AI?

- There is no widely agreed-on definition
  - Even among AI researchers

- “Artificial intelligence is the intelligence exhibited by machines and software.”
  – Wikipedia

- “AI refers to computer systems capable of performing tasks that typically require human intelligence, such as reasoning, learning, perception, and language understanding.”
  – ISO (International Organization for Standardization)

Do you use AI?

What are these tools?

ChatGPT

"Try ChatGPT to become an expert on any topic"

Claude

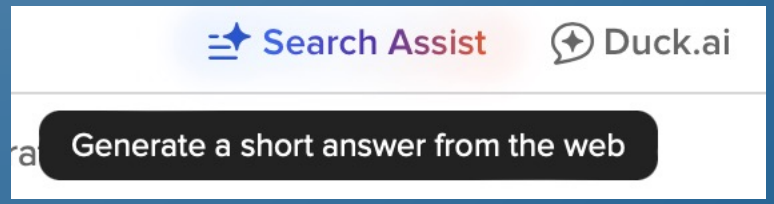
"Next generation AI assistant"

perplexity

"AI-powered answer engine"

AI Overview

Google search



DuckDuckGo

Do you use AI?

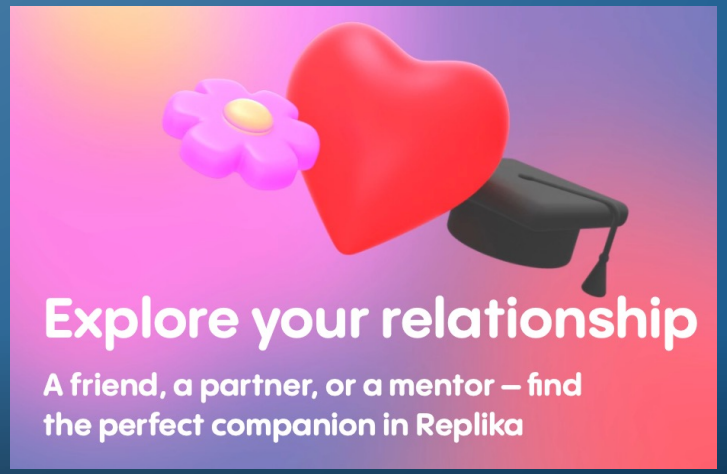
zoom AI Companion

Work happy with Zoom AI Companion

KHANMIGO

by Khan Academy

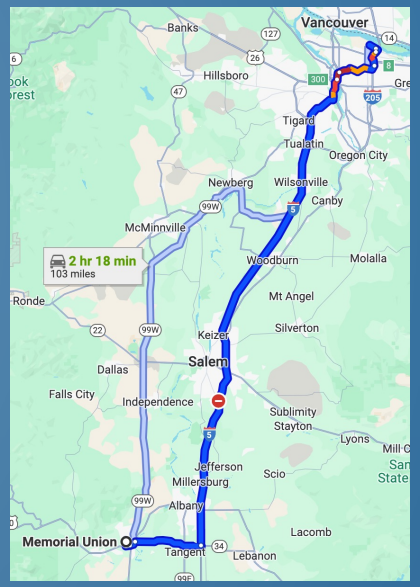
Meet Khanmigo, Khan Academy's AI-powered teaching assistant & tutor



Do you use AI?

Unlock your smartphone

Ask a question



Get driving directions

Email spam filtering

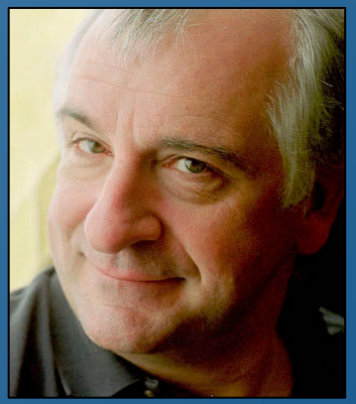
Book recommendations

Nest thermostat

(Not all AI is “generative”)

Technology and change

Anything that existed when you were born is normal and ordinary; anything invented between 15-35 is exciting and revolutionary; anything after 35 is against the natural order of things."



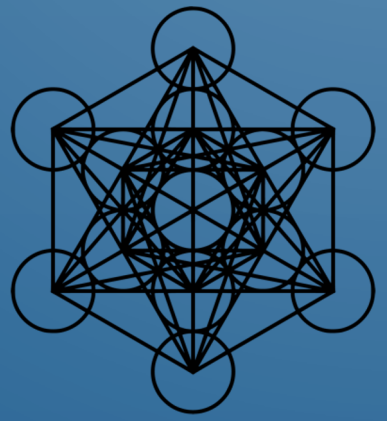
Douglas Adams
(picture Michael Hughes)

How do we grapple with new technology?

- Build on what we already know
- Find useful metaphors – how does it fit in?
- Experiment and learn

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



LLM

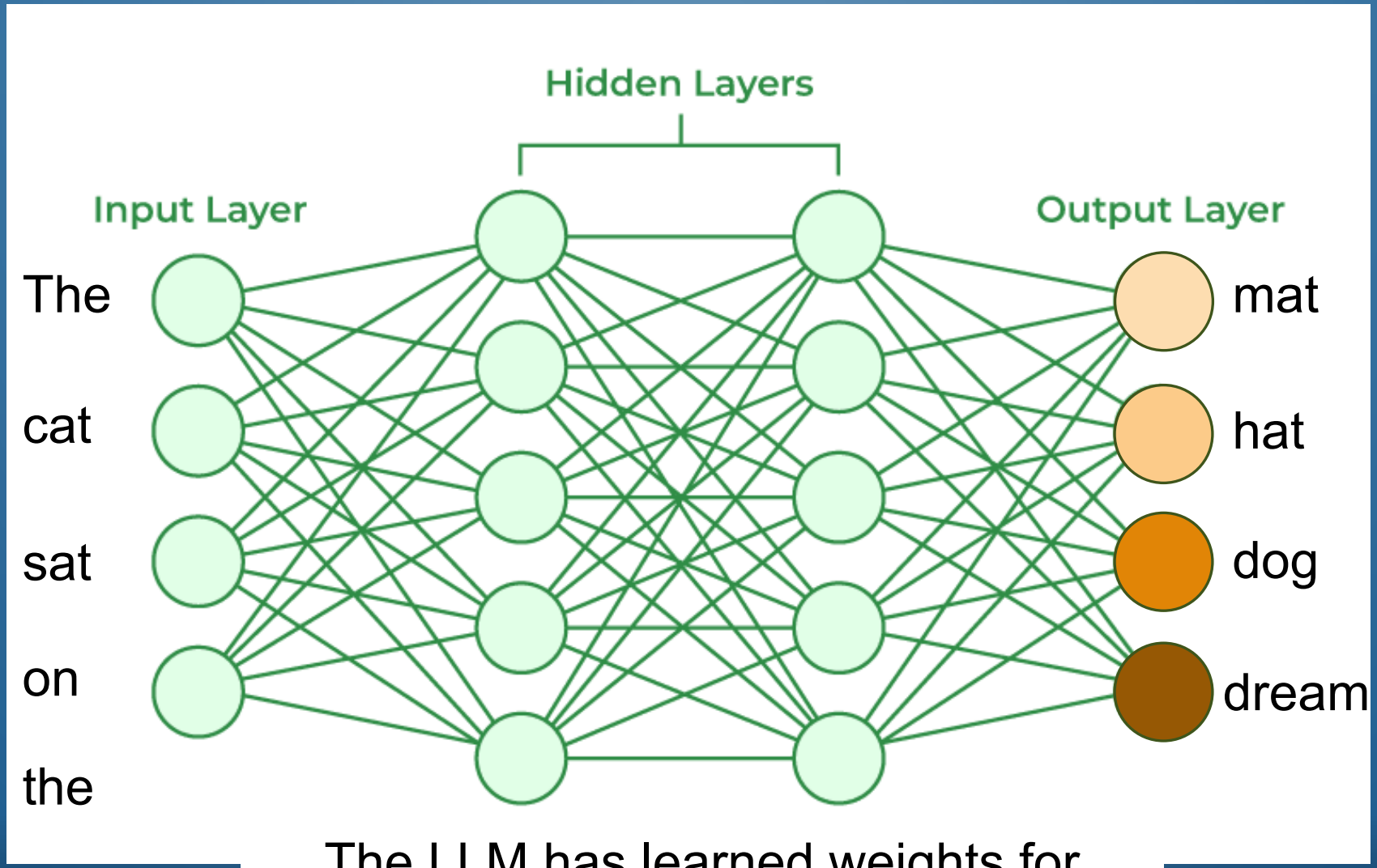
Fill in the blank

"The cat sat on the _____."

Possibly: mat, hat, chair…
Unlikely: xylophone, dream, golf…

1. The LLM predicts what could come next

The LLM prompt becomes a series of input nodes:



The LLM has learned weights for every connection from its training data

The LLM uses the weights to assign a probability to every possible next word

2. The “generative” part picks one choice

Each word is weighted by its modeled probability, shown here by brightness.

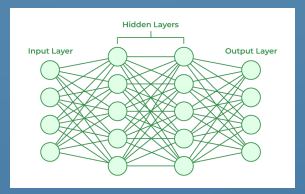
The LLM spins the (weighted) wheel and picks a word.

This is why the same prompt can give you different results each time (different spin of same wheel).

Roulette wheel by macrovecto / Freepik

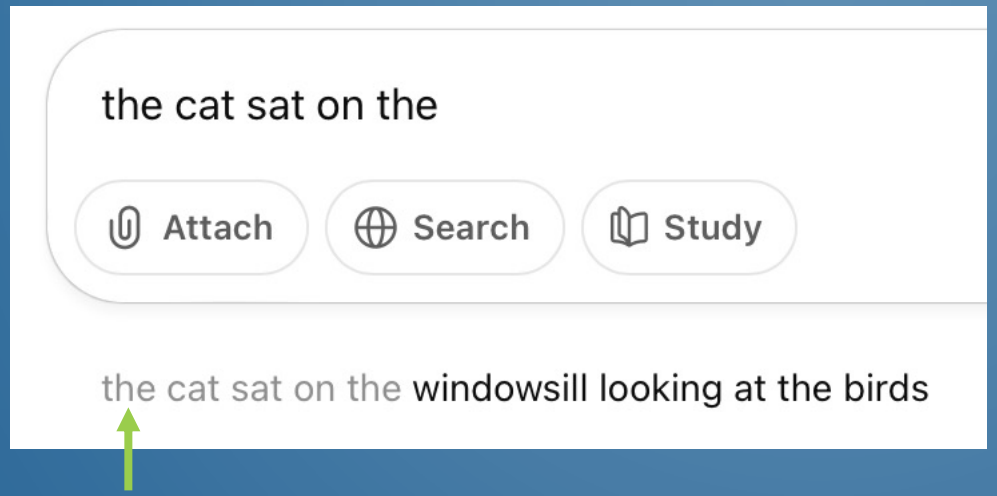
3. To get more words, repeat the process

The LLM continues to generate words based off its own output.
You only see the final result when it's done.

Prompt (input)		LLM output
The cat sat on the		mat.
The cat sat on the mat.		The
The cat sat on the mat. The		dog
The cat sat on the mat. The dog		howled.
The cat sat on the mat. The dog howled.		After
…		…

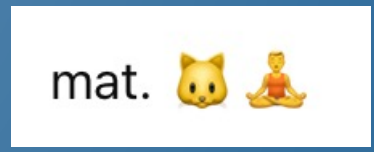
I tried this example with ChatGPT

Me:



ChatGPT started auto-completing my prompt while I was typing

I pressed “enter” and ChatGPT wrote:



AI in the classroom

Are you concerned about:

- Inappropriate student use of generative AI tools that interferes with learning
- Directives to “teach AI” without solid motivation
- Directives to “teach AI” without relevant training
- How to make good use of AI tools as an educator
- Fatigue and stress from constantly adapting to what’s out there

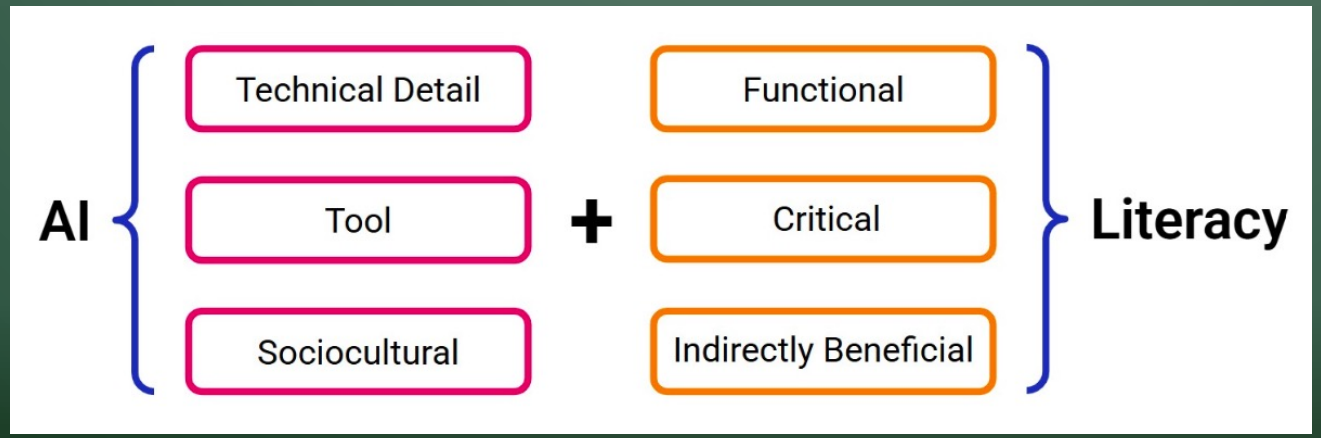
My take: Prioritize teaching “AI Literacy”

Good news

- Your students want to learn from you
- You don’t need to be an AI expert to succeed
- Guide students on when AI is an appropriate tool and when it isn’t
- Gain expertise and learn together
  - Encourage students to experiment and share what works and what doesn’t
  - Leverage their energy and innovation to learn together

What is AI literacy?

- "The essential knowledge and skills needed to understand, interact with, and critically assess AI technologies." – Digital Education Council (2025)
- Not just the ability to use AI, but to decide whether to use it
  - Need not assume that use of AI is "inevitable and desirable"
  - Demystify AI to enable informed decisions
- What do you want to teach?



[Gu and Ericson (2025)]

Dani Dilkes
(Western University)

OSU AI Literacy Center

Oregon State University
AI Literacy Center

- Mission: equip students, faculty, and staff with the knowledge and skills needed to critically engage with generative AI
- Collaboration: OSU Library + Center for Teaching and Learning
- Videos, workshops, consultations, resource guides
- Visit: https://ailiteracycenter.oregonstate.edu/

Laurie Bridges
Director

Alejandro Schaeuffler

Havel Konda

Autumn Borruel

Guiding your students

1. Share useful metaphors
2. Discuss strengths and limitations of AI systems
3. Build generative AI expertise
4. Discuss key ethical and privacy issues

Metaphors help set realistic expectations

Generative AI is not:

- A magic wand
- A brain
- A search engine
- A coach / friend / assistant
- An expert

Generative AI is:

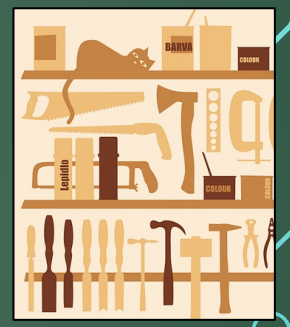
- A machine built on probabilities
- A word chooser
- A pixel chooser

Metaphors for generative AI:

- Role-player
- Improv artist
- Echo chamber
- Magic 8-ball
- Roulette wheel

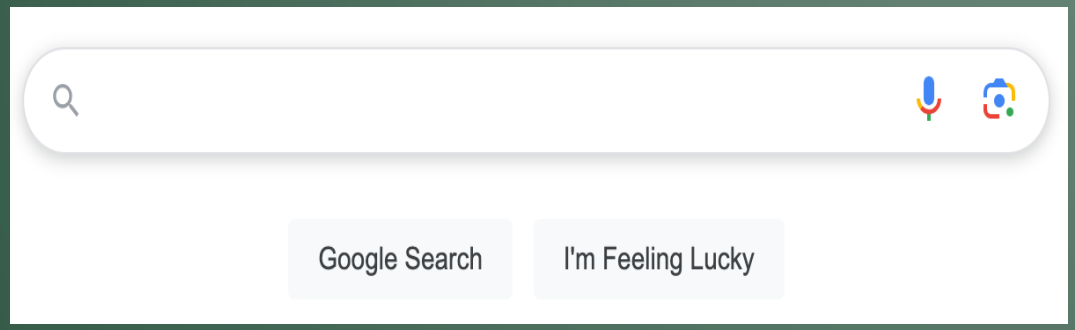
Cindy Moore's art
inspired by *Into the Woods*

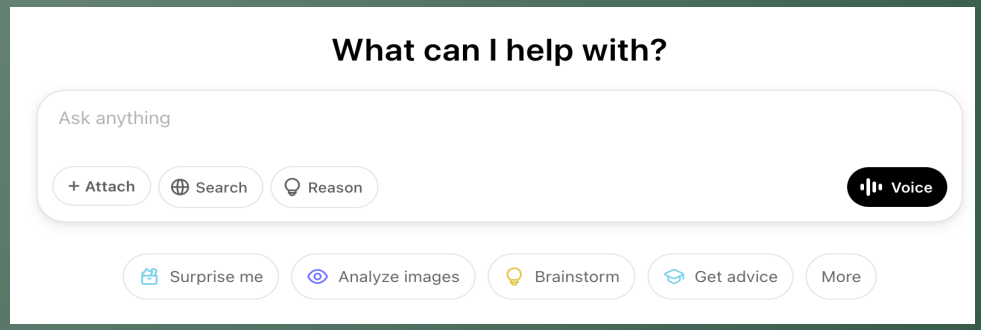
Metaphors for search vs. chatbot



By kerut / Pixabay

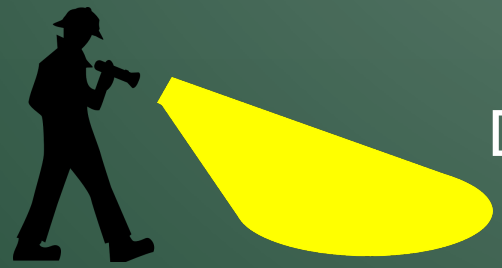
These tools look almost the same, but they aren't!





Search engine - finds real matches

Generative AI (chatbot) - generates new content



Detective

Artist

Choose your tool
to fit the task

Key limitations of AI (machine learning) systems

1. AI models assume the future will be like the past
   - E.g., recommendations assume that your movie preferences will not change
   - GenAI: Limited originality of generated content
2. AI models have limited self-efficacy: don't know what they don't know
   - E.g., over-confidence, "cat" vs. "dog" classification model presented with a horse
   - GenAI: May include false information without telling you
3. AI models often cannot explain their predictions or procedural steps
   - You may not understand how it generated an answer
4. AI models preserve bias from training data
   - E.g., always predict "sunny" for weather in southern California
   - GenAI: You may get results that don't fit your voice and you didn't intend

Teaching in the age of generative AI tools

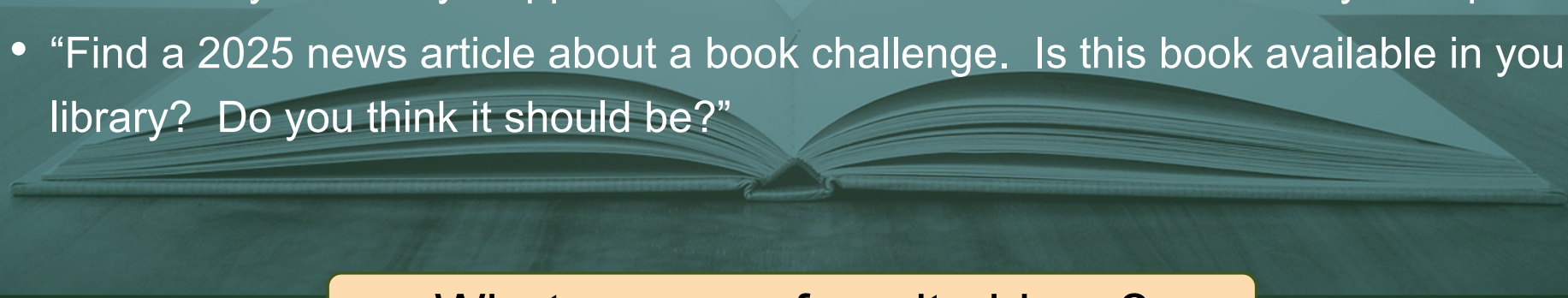
Help students learn to use GenAI effectively and critically

- Head start: “Give a chatbot your thesis statement and ask it to generate 3 different starting sentences. Discuss which one you would choose (if any) and why.”
- Fact check: “Ask a chatbot a question, then report on 3 correct and 3 incorrect statements.”
- Editor: “Ask a chatbot for ways to improve your first draft. Discuss one good change it suggested and one change you rejected.”
- Double Up: “Give two chatbots the same prompt and compare responses. Why are they different?”
- Say Again?: “Give the same chatbot the same prompt twice and compare. Why are they different?”

What are your favorite ideas?

Assessment in the age of generative AI tools

- Opportunity to reconsider how to assess learning
  - Students investigate a topic and then teach it to each other
  - Students give oral presentations
  - Students create a collage or other physical artifact
- Motivate “why should I be able to do this on my own?”
  - Students get to understand the process, not just get a result
- Personalize your assignments
  - “Describe your family’s approach to division of chores. How would you improve it?”
  - “Find a 2025 news article about a book challenge. Is this book available in your library? Do you think it should be?”



What are your favorite ideas?

Key ethical and privacy issues

- Privacy: Do not share personal information (yours or others') with a chatbot
- How and when to give credit to the source of an idea
- How to identify and avoid inappropriate bias in writing
- Problems and injuries caused by "deepfakes"
- Concerns about AI "companions"
- Environmental cost of training and using a generative AI system
- [Add your ideas here!]

Discussion time

- How do you use AI in your teaching?
  - Which tools do you find most useful?
- How do you like students to use AI?
- What uses do you want to discourage?
- What are your hopes, fears, advice related to AI in the classroom?

Making Savvy Decisions about Artificial Intelligence in Education

Your homework

- Create an activity or assignment in what you teach that is not trivial to perform with AI tools
- Draft a message to your supervisor to ask for the AI (literacy) training you need
- Have frank conversations with students about responsible use of AI
  - Strengths, limitations, ethics, privacy
- Experiment, learn, and share your experiences with us all

Thank you!

Contact: kiri.wagstaff@oregonstate.edu