

The GPT Revolution: Exploring Prospects and Roadblocks in Teaching and Learning

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Prompt: Portrait of college
students working with generative AI
([NightCafe](#), generated 9/8/2023)



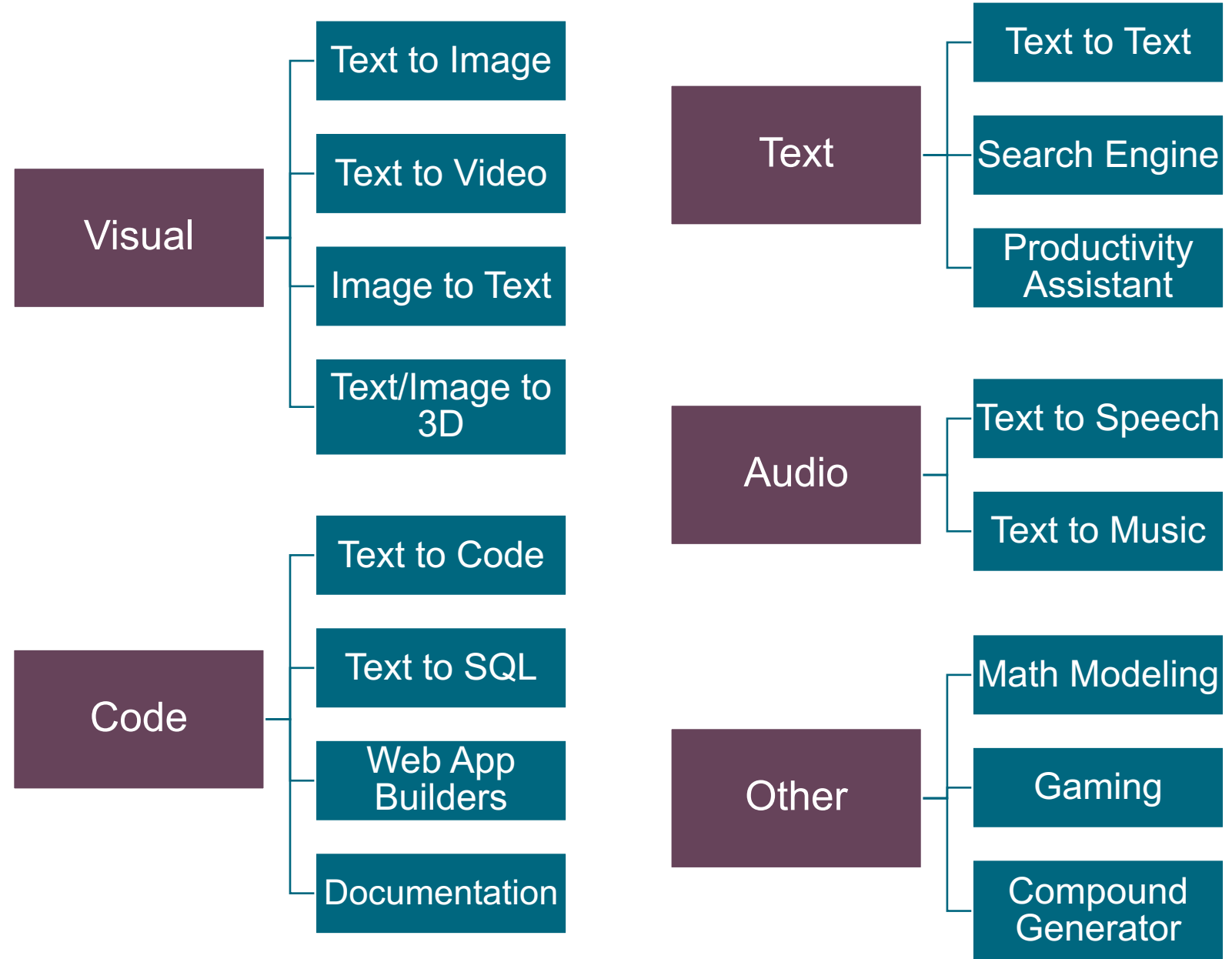
Bottom Line

Up Front

- Generative AI is becoming increasingly integrated
- Generative AI does not function well independent of human critical and creative thinking
- The world needs responsible, ethical users of generative AI
- Instructors: develop and communicate a stance on the use of generative AI for course activities

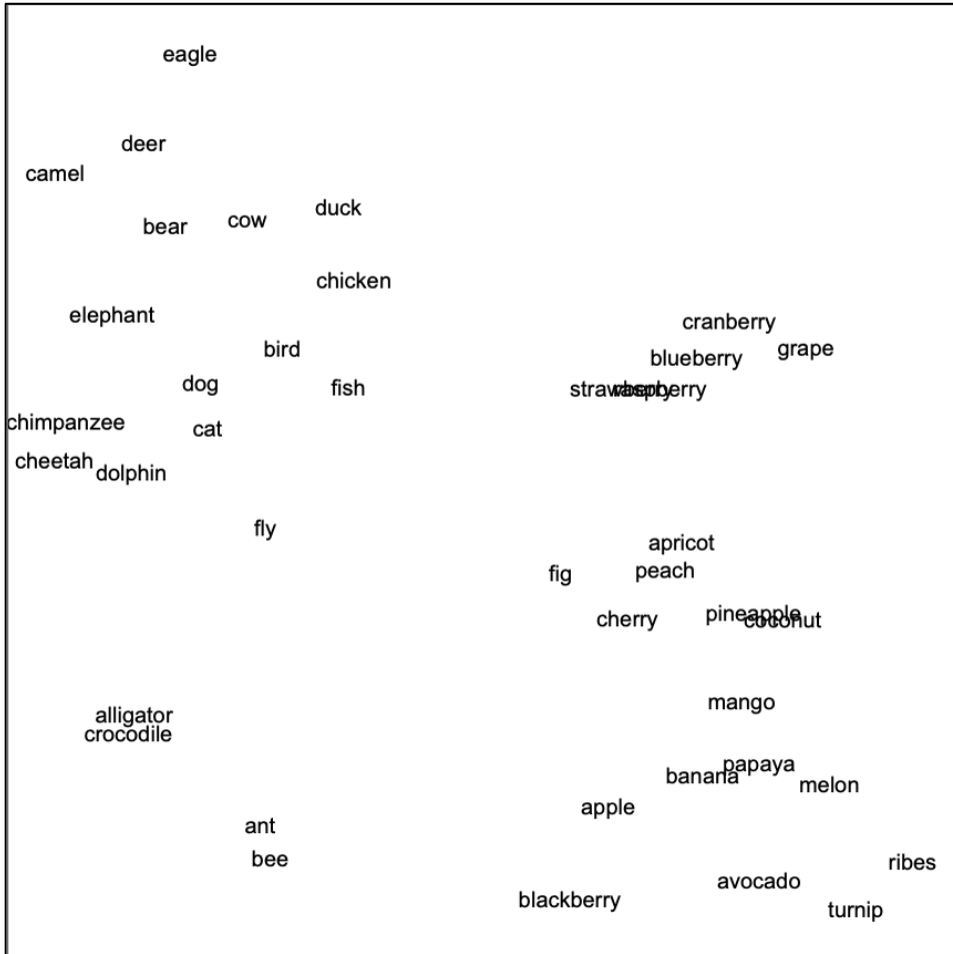


Generative AI Tools

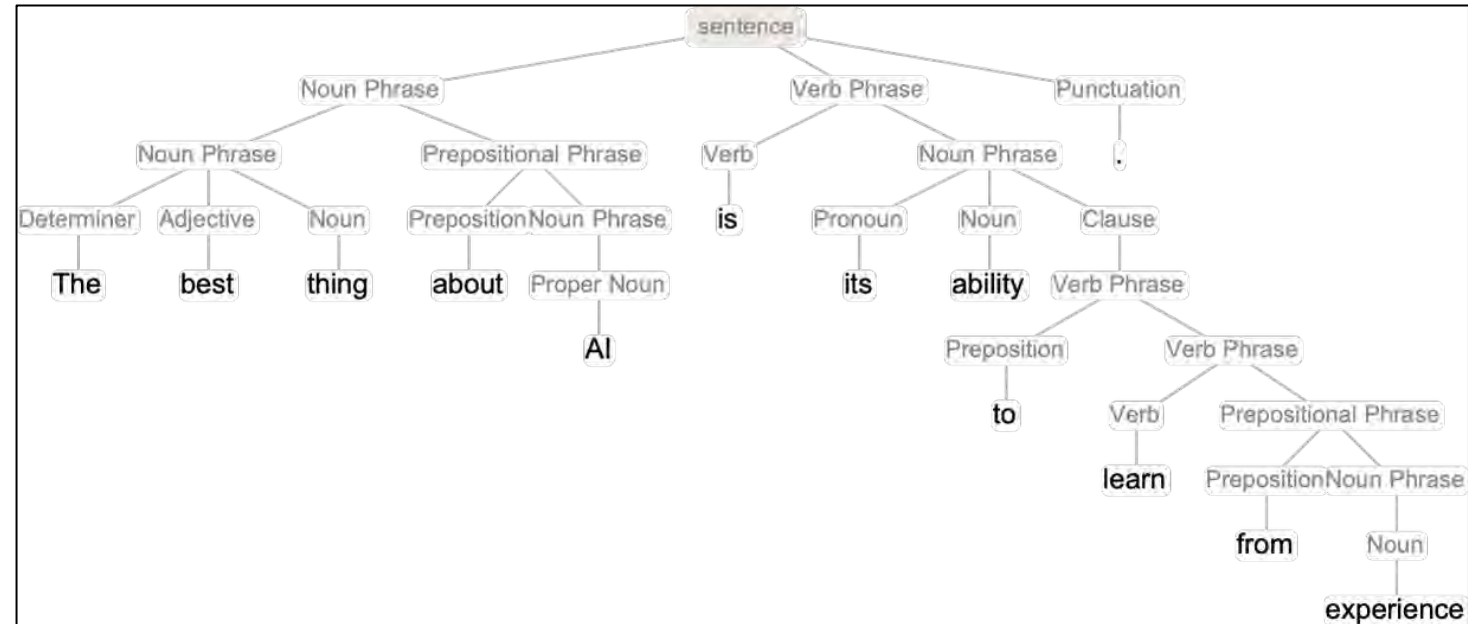


How do Large Language Models work?

learn	4.5%
predict	3.5%
make	3.2%
understand	3.1%
do	2.9%



The best thing about AI is its ability to



Wolfram 2023

Prevalent LLM tools



ChatGPT/GPT3.5: Current free version of ChatGPT, came out in November
GPT4: Available to paying customers, most capable model



Bing AI: Microsoft, GPT but connected to the internet. Multiple modes.



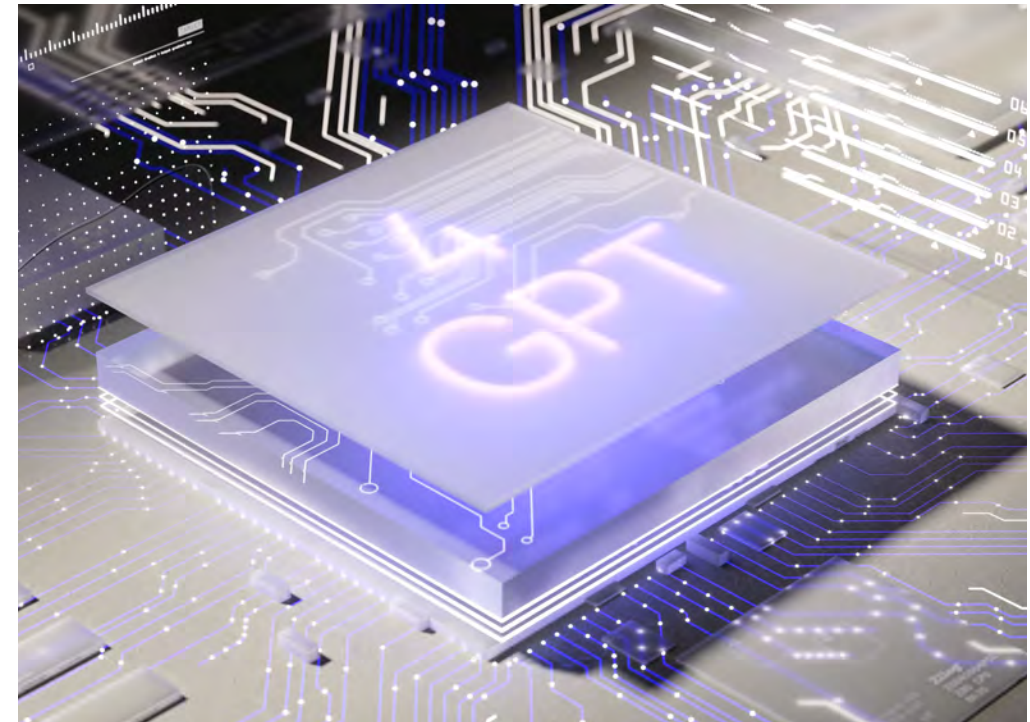
Google Bard: Current model is not very good, connected to internet.



Anthropic Claude: Can upload large documents, not connected to internet.

GPT4

- Image and text input + text output
- Can read, analyze, or generate up to 25,000 words of text (compared to 3,000 for GPT3.5)
- Can write code in all major programming languages, understand at least 95 languages
- Months-long reinforcement learning and red-teaming; additional internal guardrails around things like adversarial usage and inappropriate content
 - 82% less likely to respond to requests for disallowed content, 40% more likely to produce factual responses

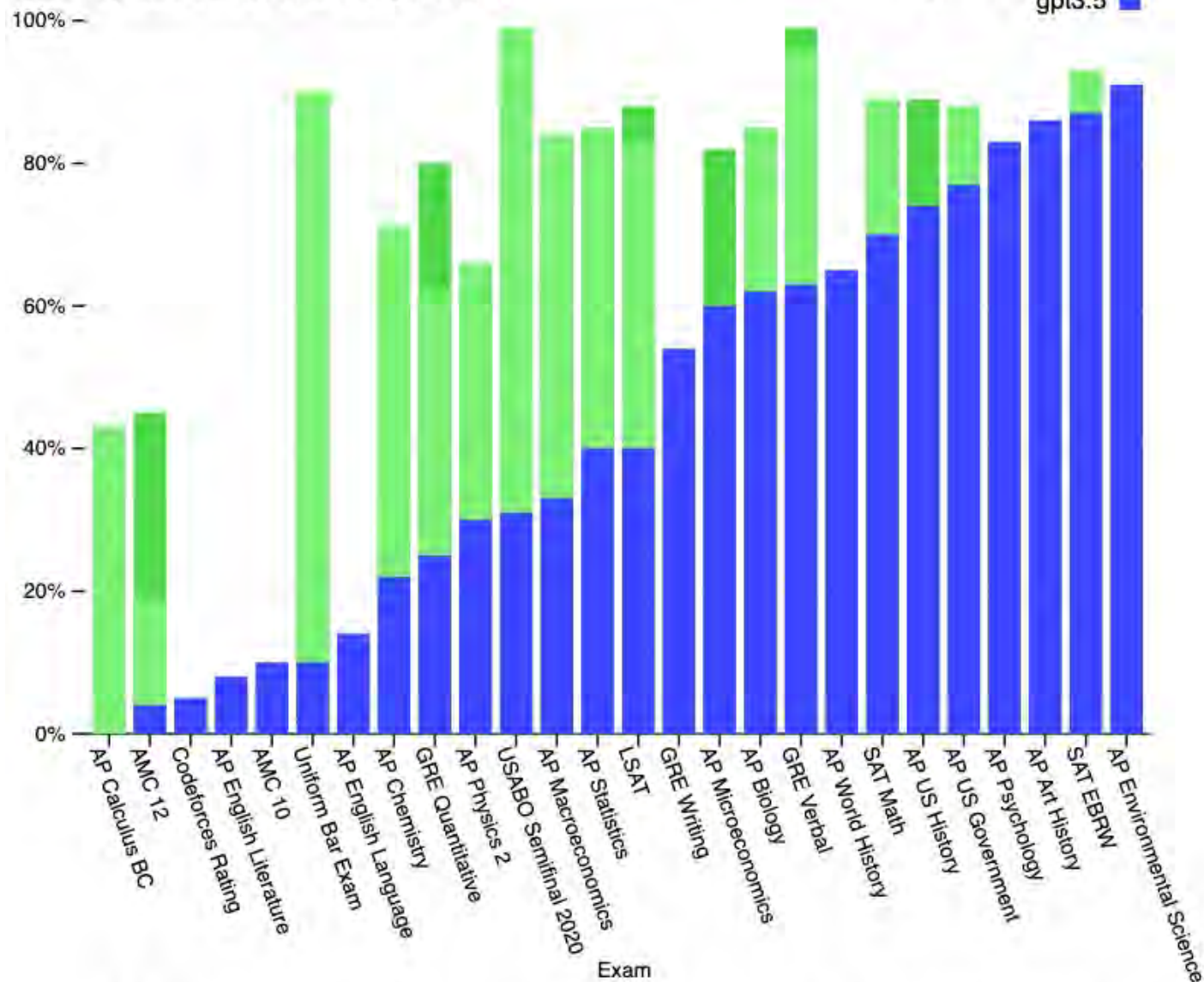


Unsplash: D Koi

GPT-4 outperforms GPT-3.5 on most standard exams

Exam results (ordered by GPT-3.5 performance)

Estimated percentile lower bound (among test takers)





GPT-4 Can Already Pass Freshman Year at Harvard

Professors need to
adapt to their students'
new reality — fast.

Concerns re: GPT

Some concerns re: GPT/Gen AI:



Unsplash: Andrea De Santis

- Not fully reliable (hallucinates facts, makes reasoning errors)
- Difficult to trace source and provenance of information (except when connected to the internet, e.g. Bing integrated GPT)
- Output overvalues modern, mainstream, internet-based, English language monocultural
- Wide range of bias that reflects the human biases found in the material it was trained on
- Ease of leveraging steerability to jailbreak information from behind internal guardrails
- Data / information privacy
- Possible unethical use of output



Consider:

What is one way you might use generative AI in your professional endeavors?



Share your thoughts in the Zoom chat window.

**What is the
educator's role in a
GPT-infused
learning
environment?**



The role of teachers in an AI world



"In this AI-infused learning [environment], teachers will be human mentors and connectors for the students. Human teachers will be the driving force behind stimulating the students' critical thinking, creativity, empathy and teamwork. And the teacher will be a clarifier when a student is confused, a confronter when the student is complacent, and a comforter when the student is frustrated: roles AI cannot play."

-Kai Fu-Lee, Ph.D., Time Magazine, August 2021

“Instead of treating ChatGPT as the horizon, look farther out. Our approach to teaching should be guided not by one recent product but by reflection on the lives our students are likely to lead in the 2030s. What will the writing process look like for them? Will they use models as research assistants? As editors?”

... our goal is not to train students for specific tasks but to **give them resilience founded on broad understanding** [...] Discussing why it does work may help students see why the details of writing matter and why it’s hard to separate writing from thinking.”

-Ted Underwood, University of Illinois at Urbana-Champaign (Inside Higher Ed, January 2023)



**How do we set the stage for productive
engagement with generative AI?**

Consider:

What are the ethical issues concerning use of generative AI (GAI) in your field?



Visit <https://www.menti.com/> and enter code: 3600 6272

Consider:

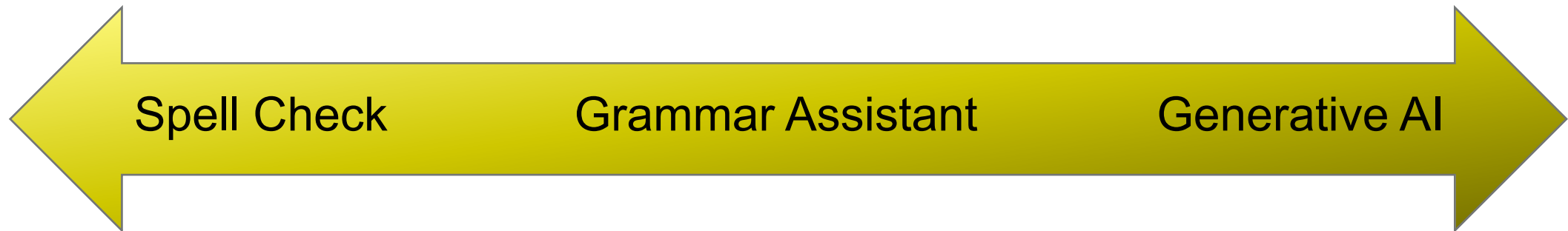
How might GAI tools benefit (or hinder) people with less experience in your field?



Visit <https://www.menti.com/> and enter code: 3600 6272

If nothing else...

Develop and communicate a stance that promotes responsible, ethical use of AI tools.



Sample policies

You are encouraged to talk about your ideas and work with other people, as well as generative AI (GAI) tools. Any work not created by yourself should include a proper source citation. For GAI, that may include prompts and specific AI used.



Be aware the limits of GAI tools:

- If you provide minimum effort prompts, you will receive low quality results. Practice careful prompt engineering.
- Note that GAI is not fully reliable. It is your responsibility to assess the validity and applicability of any GAI output that is incorporated into your work.

Use of GAI tools is an emerging skill. We will explore tutorials and demos frequently. If you would like to provide a demo of a GAI application to our group, please let me know.

Sample policies



You are welcome to explore the use of generative artificial intelligence (GAI) tools for your work, but use of GAI tools should be appropriate for the task or circumstance. If you are uncertain if an application of GAI is appropriate, please ask.

In addition, you may not represent output generated by a GAI program as your own work. Any such use of GAI must be appropriately cited / disclosed.

Finally, GAI is highly vulnerable to inaccuracy and bias. You should assume GAI output is wrong unless you either know the answer or can verify it with another source. It is your responsibility to assess the validity and applicability of any GAI output used.

Sample policies



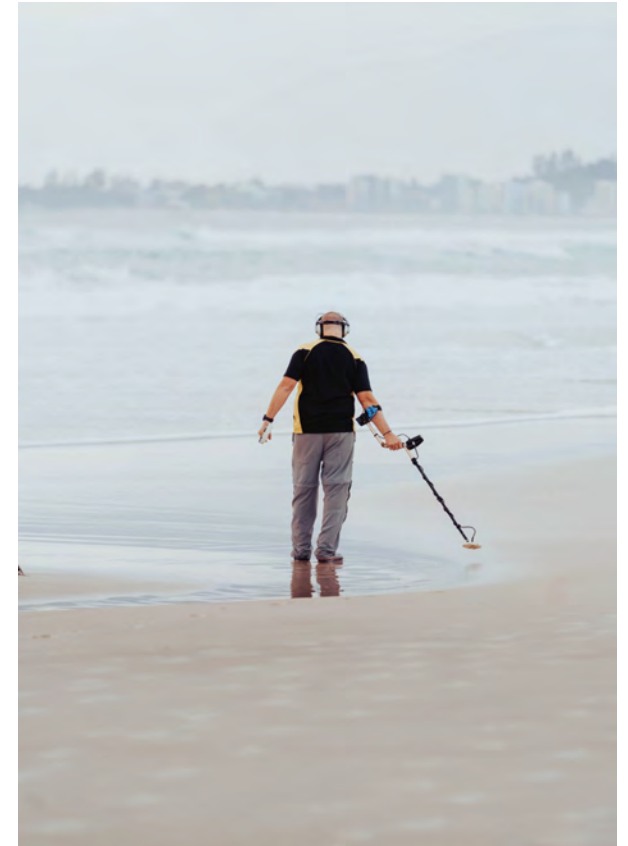
We expect that all work is your own unless otherwise cited / disclosed. Use of artificial intelligence writing tools or generative AI (GAI) tools is disallowed at all stages of the work process, including preliminary ones. This includes tools like Grammarly, Wordtune, ChatGPT, etc. If you are unsure whether you can use a tool to support your work, please ask.

Policing our way out?

AI detection systems are imperfect...

Turnitin AI Writing Detector: correctly identifies 97% of GPT3.5/ChatGPT generated text, ~4% false positive rate

...and, easily evaded by simple modifications to the text in question (human-generated, AI generated).



Unsplash: Carnaby Galani

Questions and Answers



Thank you!