

Using AI Effectively in Physical Geography I

What is Gen AI?

- Stands for Generative Artificial Intelligence
- Generative AI is a type of artificial intelligence used to create new content based on models trained on text, visual, and audio data in response to prompts.
- Common platforms:
 - ChatGPT (OpenAI)
 - Copilot (Microsoft)
 - Gemini (Google)
 - Others

Defining Generative AI (Infographic from AI for Education)

To understand generative artificial intelligence (GenAI), we first need to understand how the technology builds from each of the AI subcategories listed below.

- Artificial Intelligence
 - The theory and methods to build machines that think and act like humans
 - Expert System AI: Programmers teach AI exactly how to solve specific problems by providing precise instructions and steps.
- Machine Learning
 - Subcategory of Artificial Intelligence
 - The ability for computers to learn from experience or data without human programming.
- Deep Learning
 - Subcategory of Machine Learning
 - Mimics the human brain using artificial neural networks such as transformers to allow computers to perform complex tasks.
- Generative AI
 - Subcategory of Deep Learning
 - Generates new text, audio, images, video, or code based on content it has been pre-trained on

How is AI being used in GIS and Geography?

- GeoAI
 - Geospatial artificial intelligence (GeoAI) is the application of artificial intelligence (AI) fused with geospatial data, science, and technology to accelerate real-world understanding of business opportunities, environmental impacts, and operational risks.

- Several GIS courses already use GeoAI, and this trend will only increase.
- [More about GeoAI from Esri](#)
- [The Geography of AI: Which cities will drive the artificial intelligence revolution?](#) Report from Brookings by Mark Muro and Sifan Liu

How is AI being used in other fields?

- AI is a space to explore and create
 - [Students Are Using AI Already. Here's What They Think Adults Should Know](#) by Ryan Nagelhout at the Harvard Graduate School of Education
- Generative AI Use Cases from [What is Generative AI?](#) from NVIDIA
 - Language:
 - Marketing (content)
 - Note Taking
 - Gene Sequencing
 - Code Development
 - Essay Generation
 - Visual
 - Video Generation
 - 3D Models
 - Design
 - Image Generation
 - Auditory
 - Music Generation
 - Voice Generation

Academic Integrity

- AI-based detection for AI-generated writing has yet to prove itself as reliable and accurate

Generative AI: Student Guidance

What GenAI can and can't do is changing.

- "What the large language models are good at is saying what an answer should sound like, which is different from what an answer should be" (Brooks quoted in Hale 2024).
- Try these experiments with a GPT of your choice:
 - Exercise 1 on study skills

When to use AI

- You should use generative AI (ChatGPT, Copilot, Gemini, etc.) in the assigned Artificial Intelligence exercises.
- If you follow the AI instructions, it will be clear that generative AI should be used.

When not to use AI

- You should not use AI to write your discussion response.
- If you are unsure whether the use of AI is appropriate for a specific activity or assignment it is your responsibility to reach out to the instructor for clarification before using AI.

Always cite your source

- Example format:
Bibliography
OpenAI. (2023). *ChatGPT* (March 23 Version) [Large language model].
<https://chat.openai.com/chat>

Final thought: AI and the environment

- Did you know that ChatGPT equals one bottle of water? [Learn more about AI and the environment.](#)

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