



# AI Literacy for College Students

Thinking Critically, Ethically,  
and Creatively with AI

# Module 1: What AI Is and Is *Not*

*Merriam-Webster* (n.d.) defines **artificial intelligence (AI)** as “the capability of computer systems or algorithms to imitate intelligent human behavior.” Does this align with your understanding of AI? What other definitions have you heard?

The key concept to understand is that AI “imitates” human behavior. It is not a thinking being; it does not reason, verify facts, or make judgments. Any accuracy, meaning, or ethical responsibility comes from the person using the tool.

## Why AI Literacy Matters

**AI literacy** is the ability to understand, use, and think critically about AI technologies and their impacts. Since AI already shapes **what information you see, the content you create, and the decisions you make** in academic work and daily life, being AI literate means you can:

- recognize AI’s influence
- make informed choices about when and when not to rely on AI
- evaluate outputs critically
- use AI responsibly and ethically (*see sidebar*)

## Categories of AI

AI can be classified by capability (how it can perform) and by functionality (how it operates).

### By Capability

The only form of AI that currently exists is **Artificial Narrow Intelligence (ANI)**, also called narrow AI or weak AI. These systems are designed to perform specific tasks within limited domains. It may appear highly capable but cannot generalize knowledge or operate with humanlike understanding across unrelated contexts.

You may encounter concepts such as **Artificial General Intelligence (AGI)**, a hypothetical AI capable of humanlike reasoning and learning across many domains, and **Artificial Superintelligence (ASI)**, a hypothetical AI that would surpass human intellectual capabilities. However, neither currently exists, and all AI systems in use today are forms of ANI.

### By Functionality

- **Rule-based AI:** follows a set of rules created by humans to complete tasks or make decisions; does not learn or adapt over time  
Examples: tax preparation software; grammar and spellchecker tools
- **Machine learning (ML):** learns from examples in data to identify patterns and make predictions, recommendations, or decisions  
Examples: recommendation systems that suggest videos, music, or study content; email spam filters
- **Deep learning:** a type of machine learning that uses large amounts of data to recognize complex patterns in language, images, audio, and other information  
Examples: speech-to-text transcription tools; facial or object recognition in photos

## What Does “Using AI Ethically” Mean?

Using AI ethically does not always have one clear answer. What is considered ethical can depend on the situation, the goal, and the people it affects. Think of ethical AI use as a spectrum, ranging from clearly responsible to clearly harmful, with many gray areas in between.

Visit [Module 3](#) for more information and clear guidelines on using AI ethically.

- **Generative AI (GenAI):** creates new content based on patterns learned from existing data, such as text, images, audio, video, or code  
Examples: chatbots that generate written responses; AI image generators that create images from prompts
- **Predictive AI:** uses existing data to estimate what is likely to happen or help make decisions  
Examples: navigation apps that predict travel times; weather forecasting tools

**Note:** These categories often overlap. For example, many generative AI systems use deep learning, and deep learning is one type of machine learning.

## AI Outputs Are Likely, Not Verified

- AI does **not check facts**.
- Outputs may sound confident even when **incomplete, outdated, or wrong**.
- **Verification** (the process of checking whether information, outputs, or claims are accurate, reliable, and supported by evidence before using them in decisions or work) is **your responsibility**.

## Bias and Data Limitations

AI learns from data created by people. If that data is missing important info or includes **bias** (a tendency to lean in a certain direction when thinking, deciding, or measuring something), AI can repeat or amplify problems, such as:

- some groups or voices being left out or represented unfairly
- reinforcement of stereotypes
- unequal outcomes for different groups of people

This really matters, especially when AI is used in education, hiring, health care, or public decisions.

### Examples:

- **Facial recognition systems:** If an AI system is trained mostly on images of light-skinned faces, it may perform poorly on darker-skinned faces, possibly resulting in higher error rates for certain groups, leading to unequal treatment.
- **Hiring algorithms:** If a hiring tool is trained on résumés from a company that historically hired mostly men, it may learn patterns that favor male candidates, leading to qualified applicants from other groups being ranked lower.

## The Black Box Problem

The term *black box* refers to a system where you can see what goes in and what comes out, but not exactly how the system arrived at its answer. Many AI systems are so complex that even their creators cannot fully explain how specific results are created. This makes it:

- harder to understand mistakes
- harder to detect or correct bias
- harder to question decisions made using AI

### Further Resource

Even when AI sounds correct, it might not be; check out this blog post about why ChatGPT couldn't count how many *r*'s are in the word *strawberry*.

[hawkes.biz/Almistakes](https://hawkes.biz/Almistakes)

### Further Resource

Check out this article explaining AI's mysterious black box problem.

[hawkes.biz/blackbox](https://hawkes.biz/blackbox)

**Takeaway:** Use AI as a tool, not as a decision-maker, especially when the stakes are high or the outcome is significant.

## Environmental Concerns of AI

AI systems require massive amounts of data, computing power, and physical infrastructure to train, maintain, and operate. As AI use expands, concerns have grown about its environmental impact and long-term sustainability. This often includes:

- **Energy and resource demands:** AI systems rely on large data centers that consume substantial electricity for computing and cooling and, in many locations, require significant water resources to manage heat.
- **Land use:** Expanding AI infrastructure requires land for new data centers, which can place pressure on local land use, energy grids, and water supplies and may contribute to the conversion of agricultural or undeveloped land.
- **Hardware production and electronic waste:** AI depends on specialized hardware, such as graphics processing units (GPUs) and servers, whose manufacturing, replacement, and disposal require raw materials, energy, and generate electronic waste.
- **Carbon emissions:** When powered by fossil-fuel based electricity, AI systems indirectly contribute to greenhouse gas emissions and climate change (Liu and Yin 2024).

**Example:** Training a single large AI model can use as much electricity as streaming thousands of hours of video or powering an average household for several months.

### Tips for Environmentally Responsible AI Use

- **Use AI intentionally.** Consider whether AI meaningfully improves the task or whether a simpler tool would work.
- **Choose efficient tools.** Many AI platforms offer “lightweight” or energy-efficient options.
- **Avoid unnecessary processing.** Limit repeated generations of excessive outputs.
- **Be specific with prompts.** Clear instructions can reduce the number of follow-up requests and repeated generations needed to get a useful result. (Visit [Module 4](#) for informed prompting practices.)

## Why This Matters

Understanding AI helps you to:

- **Use AI intentionally and effectively** by choosing when and how it adds value to your work.
- **Evaluate AI outputs critically** by recognizing limitations, bias, inaccuracies, and missing context.
- **Make informed and ethical decisions** by considering the academic, social, environmental, and broader impacts of AI use.

## Try It

Identify one place AI influences the information you receive or the decisions you make in your own life. (**Hint:** *Have you ever noticed that your social media feed, streaming recommendations, or online ads seem tailored specifically to you?*)

Who benefits, and who might be disadvantaged from this type of influence? What can you do to broaden your awareness of AI and its influences?