



# The Perils and Promise of Artificial Intelligence

Using AI in Research, Teaching, and Learning

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A vintage blue tin robot with a square head, large eyes, and a red button on its side. The robot has a rectangular body with a grid of small holes. It features a black gauge with a white needle on the left and a circular gauge with a red needle on the right. The front panel has a colorful illustration of mechanical parts. The text "AI Defined" is overlaid in white on the robot's chest.

AI Defined

## **artificial intelligence, n.**

The capacity of computers or other machines to perform tasks that typically require human intelligence such as reasoning, problem-solving, and decision-making

## **generative artificial intelligence, n.**

Artificial intelligence designed to generate content, typically by using machine learning to extrapolate from large collections of training data

A collection of vintage tin robots in various colors and designs, including blue, red, and white models with intricate mechanical details and painted patterns. The robots are arranged in a group, with some in the foreground and others in the background. The background is a plain, light-colored surface.

# AI-Generated Outputs



# Text



Explain artificial intelligence in the style of Donald Trump



Listen folks, let me tell you about this thing called artificial intelligence, okay? It's tremendous, really tremendous. People are talking about it all over, believe me. So, artificial intelligence, they call it AI for short, and let me tell you, it's like having the best, the absolute best, brain for your computer. It's like having a super genius that's gonna make your computer do things you wouldn't believe, folks. It's gonna be huge for business, tremendous for jobs, and it's gonna make America win like never before. You won't even believe how smart these computers are gonna get, it's gonna be a game changer. So, AI, remember that name, because it's gonna be the future, the bright, incredible future. And let me tell you, nobody understands the future like I do, nobody.

**Source:** [ChatGPT](#)

**Prompt:** Explain artificial intelligence in the style of Donald Trump

# Images

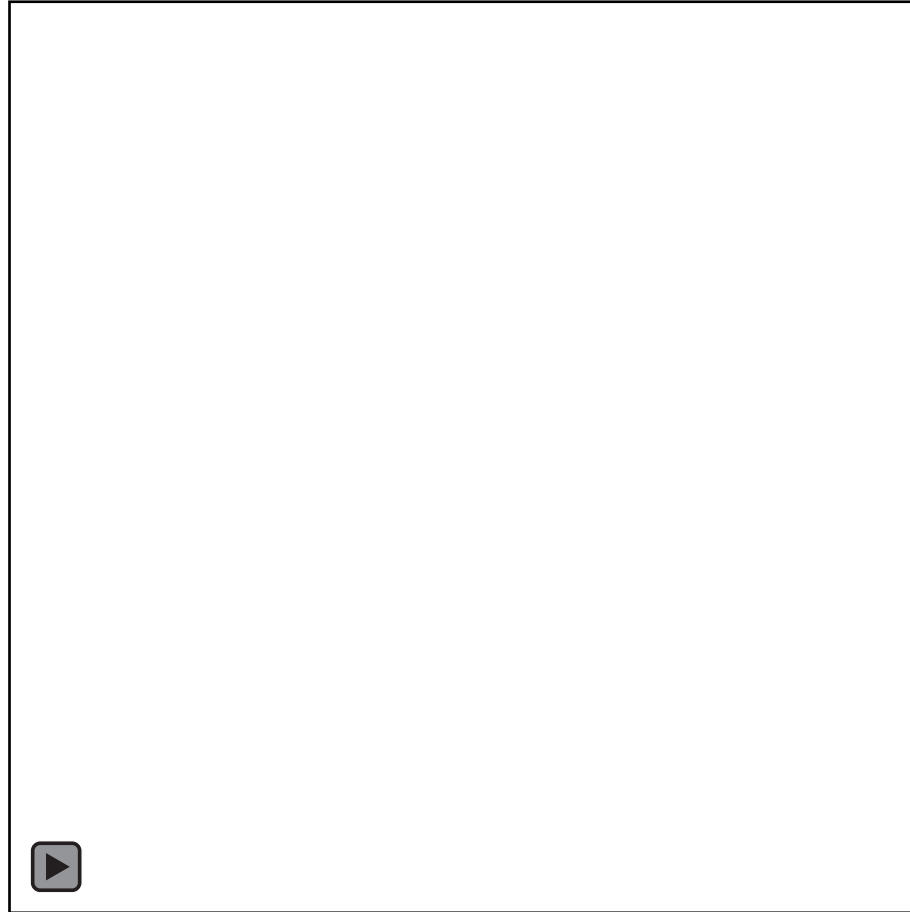


Source: [Dall-E 2](#)

Prompt: Paint a portrait of Homer Simpson in the style of Edvard Munch's "The Scream"



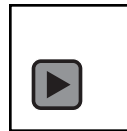
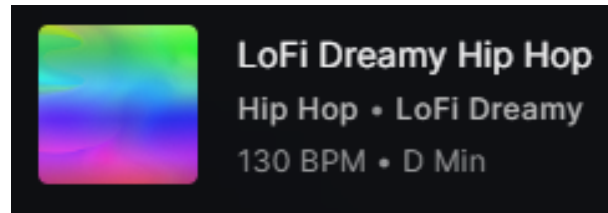
# Video



**Source:** [Kapwing](#)

**Prompt:** Create a video explaining how to make a sandwich

# Music



**Source:** [Soundful](#)

**Prompt:** LoFi dreamy hip hop



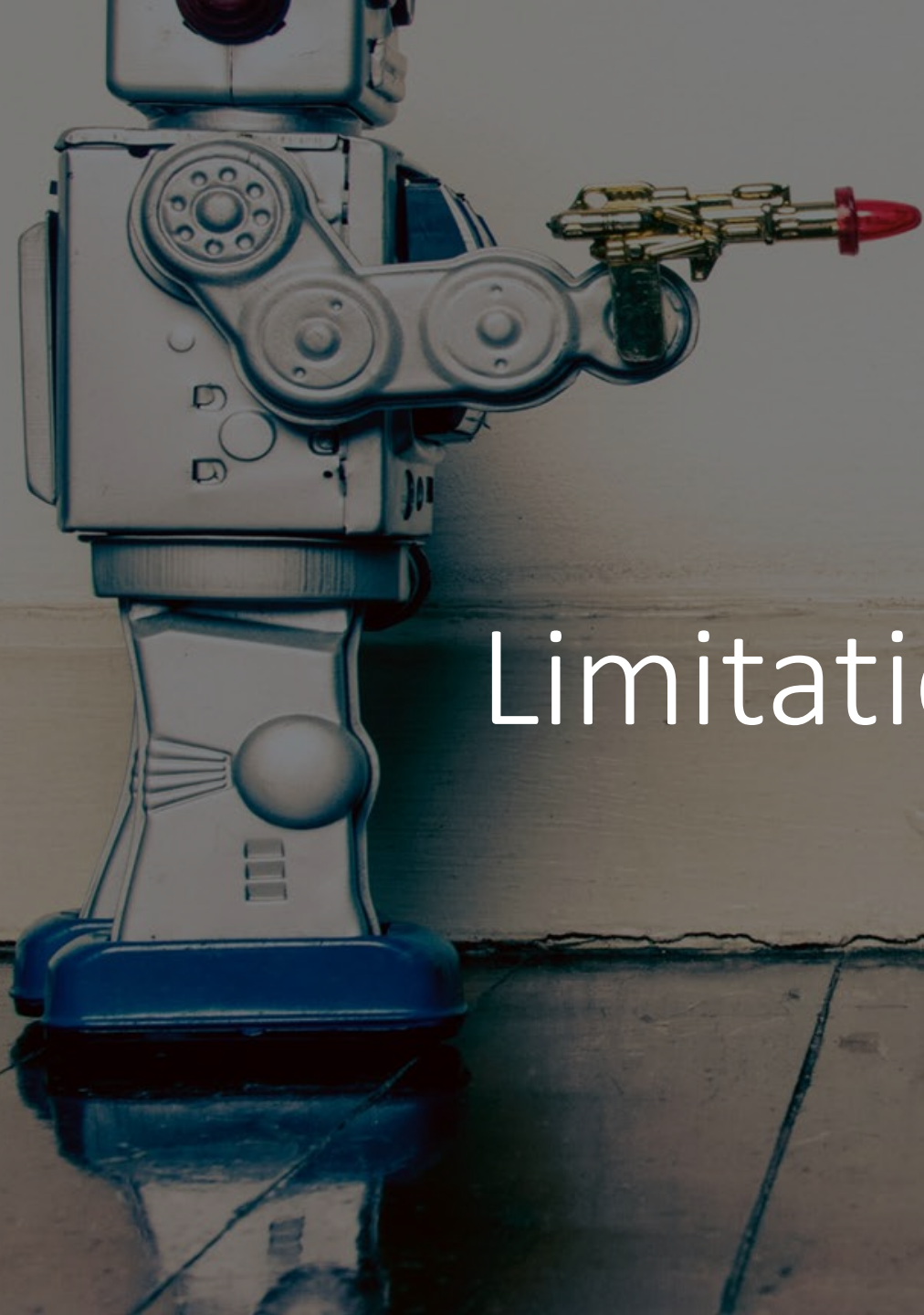
# Code

Write a function in `JavaScript` that `calculates BMI` 🌟 Create Standard

```
1 /**
2  * Calculates the Body Mass Index (BMI) based on the given weight and height.
3  *
4  * @param {number} weight - The weight of the person in kilograms.
5  * @param {number} height - The height of the person in meters.
6  * @returns {number} The calculated BMI.
7  * @throws {Error} Throws an error if the weight or height is not a positive number.
8  */
9 function calculateBMI(weight, height) {
10   if (weight <= 0 || height <= 0) {
11     throw new Error("Weight and height should be positive numbers.");
12   }
13 }
```

Source: [CodePal](#)

Prompt: Write a function in JavaScript that calculates BMI



# Limitations of AI



# Ethical Concerns

- Bias and fairness
- Misinformation and manipulation
- Plagiarism and copyright
- Attribution and accountability
- Social and global inequality

# Quality and Reliability

- Quality
- Consistency
- Superficiality
- Degeneration (“model collapse”)

# Data Privacy and Security

- Data exposure
- User privacy



# De-skilling and Displacement

- Loss of traditional skills
- Job displacement
- Labor exploitation

# Environmental Impact

- High computational demands and energy consumption

A vintage blue robot toy with a coiled wire for hair, two circular eyes, and a rectangular mouth with a grid pattern. It has a rectangular body with two dials and a transparent window showing internal gears. The robot stands on two orange feet. To its right is a spiral-bound notebook with a light beige cover and a black spiral binding. Several unsharpened pencils of various colors (red, blue, yellow, green) are scattered around the notebook. A small, light-colored paper tag is also visible in the upper left. The entire scene is set against a solid teal background.

# Academic Uses of AI



# Create a Syllabus

**Prompt:** Create a syllabus for a 15-week introductory, undergraduate-level sociology course that meets once a week for 90 minutes. The syllabus should outline the course objectives, topics, grading policies, guidelines for using generative AI, and expectations for student behavior and participation. The required textbook for the course is Anthony Giddens et al. Introduction to Sociology, 12th edition. For each week, suggest lecture topics, readings, and assignments based on the chapters of the textbook.

[View output >](#)

# Design a Lesson Plan

**Prompt:** Design a ninety-minute lesson plan for an undergraduate American history course on the 1886 Haymarket Square Riot. The plan should include activities that help students understand the factors leading to the event, its consequences, and its relevance to the contemporary labor movement. It should also incorporate primary sources, classroom discussions, and multimedia resources designed to engage students in critical thinking and analysis.

[View output >](#)

# Suggest Discussion Topics

**Prompt:** Generate five discussion prompts about Howard Zinn's *A People's History of the United States* for a graduate-level U.S. history course. Generate one prompt for each of the following topics discussed in the book: colonization, slavery, labor movement, black civil rights, and women's liberation. Each prompt should ask students to engage with at least one primary source about that topic.

[View output >](#)

# Create a Quiz

**Prompt:** Create a 10-question multiple choice quiz for an undergraduate introductory physics course based on the following learning objective: Explain the properties of waves, including wavelength, frequency, amplitude, and velocity. Indicate the correct answer for each question.

[View output >](#)

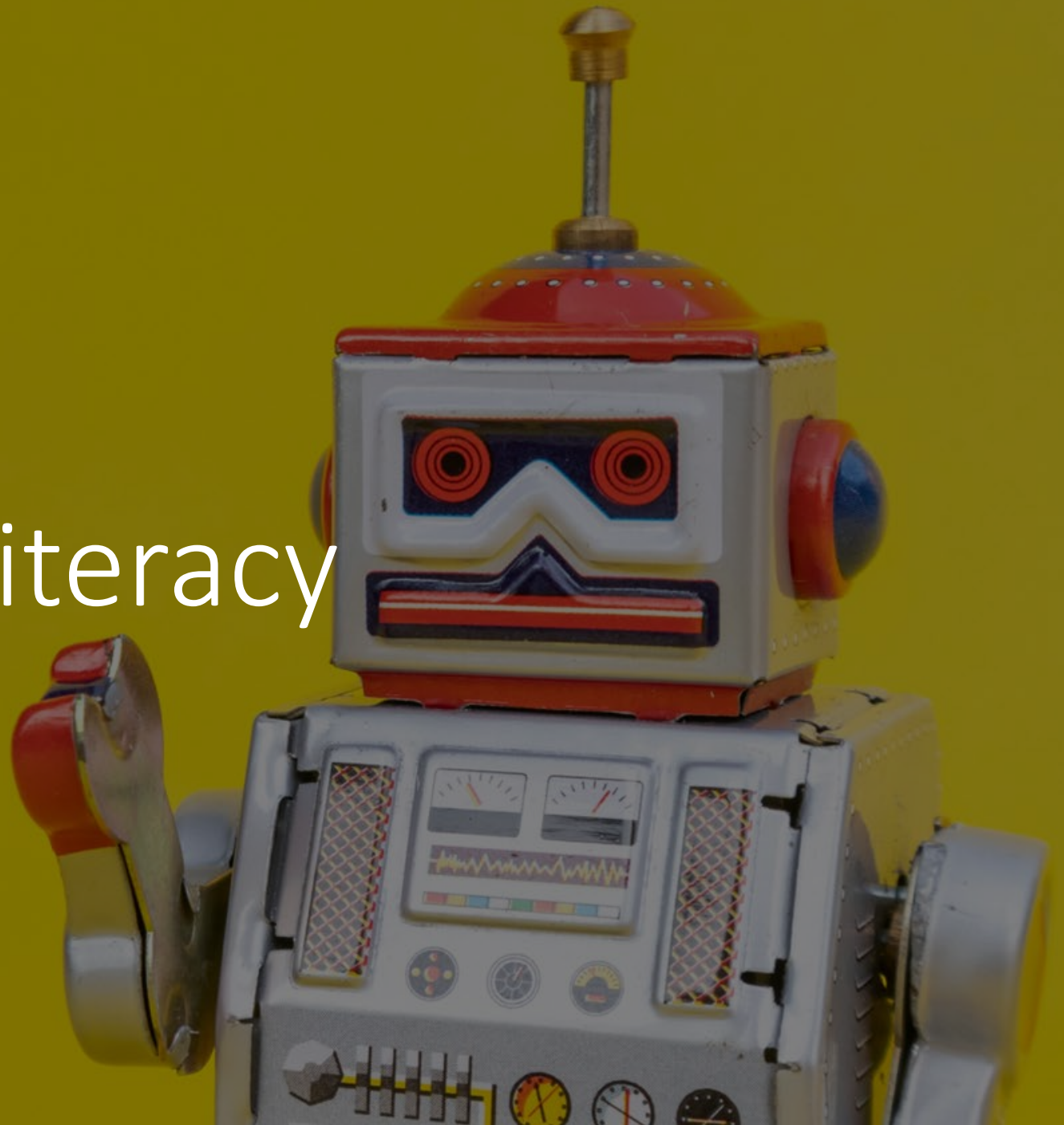


# Draft an Outline

**Prompt:** Create an outline for a 10-page academic research paper with the following research question: “To what extent does exposure to diverse political perspectives on social media affect individuals’ political opinions and behaviors?”

[View output >](#)

# AI Literacy



# Learning Objectives

- Engage in critical thinking by questioning the accuracy, bias, and potential manipulation of AI-generated information
- Recognize and address ethical dilemmas related to bias, misinformation, privacy, intellectual property, and accountability
- Evaluate information sources and distinguish between human- and AI-generated content
- Use AI tools effectively and responsibly, maximizing their benefits while minimizing risks
- Adapt to new AI technologies as they continue to evolve and participate in discussions about their societal impact

# AI-Generated Paper Review

Provide students with a research paper that was partially or fully generated by AI. Ask them to critically review the paper, evaluating the clarity of the research question, methodology, data analysis, and conclusions. Have them identify any biases, inaccuracies, or inconsistencies in the paper. Ask students to compare the AI-generated work with human authored research and reflect on the reliability of AI-generated content in academia.



# AI-Generated Abstract Analysis

Assign students to write abstracts for a selection of scholarly articles. Then provide them with a set of AI-generated abstracts and ask them to assess whether they accurately summarize the main points of the articles and provide a clear understanding of the research. Have students discuss the role of abstracts in academic writing and the limitations of AI in interpreting and summarizing complex topics.

# Social Media Content Analysis

Give students examples of AI-generated social media posts, comments, or messages. Ask them to analyze the language, style, and relevance of the content. Have students discuss the potential consequences of AI-generated social media interactions, such as the spread of misinformation, influence on public opinion, and the erosion of authentic online communication.

# Ethics of AI Content Generation

Present students with scenarios where AI-generated content could have ethical implications, such as deepfake videos, derivative art works, or targeted advertising based on personal user data. Ask students to identify potential ethical concerns and consider the social, legal, and cultural implications of using such AI-generated content. Encourage them to propose guidelines or regulations to address these concerns.

# Additional Resources





For more information, examples, and suggestions for further reading, check out our guide to artificial intelligence at: <https://libguides.rutgers.edu/artificial-intelligence/>



Rutgers University / Research Guides / Artificial Intelligence (AI) / Introduction

## Artificial Intelligence (AI)

An introduction to generative AI and its use in teaching, research, and publishing.

### Introduction

AI Defined

Limitations of AI

Frequently Asked

Questions

**Types of Generative AI**

**AI Prompt Writing**

**AI in Teaching**

**AI in Research**

### AI Defined

**Artificial intelligence (AI)** refers to the capacity of computers or other machines to perform tasks that typically require human intelligence such as reasoning, problem-solving, and decision-making. AI systems use algorithms and computational techniques to process large volumes of data, extract patterns, and make predictions or decisions based on those patterns.

**Generative artificial intelligence** is a specific subset of AI focused on creating content such as text, images, video, music, and other outputs in response to user input (or prompts). Generative AI models are designed to learn the patterns and structure of their input training data and generate new data with similar characteristics. Because generative AI tools can quickly and easily generate a wide variety of human-like outputs, they have the potential to radically transform the way we approach content creation across a wide range of domains and industries. However, because AI outputs are derived from undocumented data sources, infringe on intellectual property, and are prone to error, they are also