Artificial Intelligence (AI) Applications in Engineering

Use U-M GPT to your advantage!



Analyze

Use U-M GPT to critique and interpret provided texts and data sets (essays, emails, proposals, code).

Example U-M GPT Prompts:

- Evaluate the code used for this control system for potential bugs or inefficiencies. [Insert Code].
- Analyze the tone of this email. Is it appropriate in this context? What suggestions would you have for improved tone and clarity? [Insert Email content].
- Analyze the provided interview transcripts for themes on how students engage with remote learning activities during my course. [Insert Data].

Write

Use U-M GPT to generate ideas, outlines, or drafts for written materials.

Example U-M GPT Prompts:

- Read the following essay and generate a list of counterarguments to the main points [Insert Essay].
- Help me brainstorm thesis statements for a paper on autonomous vehicle technology.
- Rewrite this paragraph for clarity and conciseness without changing the meaning [Insert Paragraph].
- Help me write a rough draft of an assignment overview. This assignment will require students to [insert assignment details].

Study

Use U-M GPT to create study materials or provide a study structure.

Example U-M GPT Prompts:

- Provide an example of C++ code that contains 2 errors. Do not tell me the errors but ask me what they are. If I can identify them correctly, tell me. If not, provide a hint to help me find the correct answer.
- Asking me one question at a time, create a quiz using the following terms. Ask me to define each term. If I get it wrong, provide the correct answer, then proceed to the next term. [Insert Terms].
- Create a comprehensive study plan for my EECS course based on the provided class schedule and syllabus. [Insert class schedule and syllabus].

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Search

Use U-M GPT to search for explanations, information related to topics of interest and answers to problems/questions.

Example U-M GPT Prompts:

- Provide a step-by-step breakdown of where the error occurred in my solution to [insert problem and answer] and how it can be corrected.
- Explain how MIMO (Multiple Input Multiple Output) technology works and its advantages over traditional single-antenna systems.
- Describe the significant developments in systems engineering and their applications in optimizing complex processes.

Evaluate

Use U-M GPT to generate content students can evaluate or critique.

Examples:

- Have students obtain an argument from U-M GPT. Their assignment is to write the rebuttal.
- Generate an engineering report with U-M GPT. Students will evaluate whether the report contains all needed elements and provide possible suggestions and edits to improve the report.
- Assign students to ask specific questions or interact with U-M GPT as a character or expert in the field and then evaluate and analyze the accuracy and depth of the response.
    - Prompt: “You are Emily Warren Roebling, a pioneering engineer known for your crucial contributions to the construction of the Brooklyn Bridge. Can you explain the fundamental mechanics of how that bridge was built and your involvement in the process?”

Generate

Use U-M GPT to generate assignments, grading rubrics, exam questions, lists, event titles, etc.

Example U-M GPT Prompts:

- Create a comprehensive list of safety protocols for a chemical engineering lab dealing with volatile substances.
- Generate a detailed grading rubric to assess students’ designs and implementations of sustainable energy systems, including evaluating efficiency, feasibility, and innovation. The total will be out of 50 points.
- Write a script for an instructional video about the principles of circuit design.
- Generate potential titles for a presentation on sustainable energy solutions in mechanical engineering.
- Compose a series of problems for a graduate-level course to test advanced chemical engineering students on reaction kinetics and catalysis.
- Provide a list of activities to help engage students during a lesson on important historical figures in engineering and their contributions.
- Generate a list of open-ended questions or brain teasers for a free-write activity at the start of a college-level robotics lesson that would encourage student thinking.