AI Gallery Homepage

Leveraging ChatGPT to Support Coding in Applied Math

Course Subject:	Applied Math in Data Science and Machine Learning
Student Level:	Undergraduate and Graduate
Number of Students:	10-50 (depending on the course)
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What Students Did

In homework, computer labs, and the final project, students solved real-world math problems using their understanding of mathematical theory and concepts. They then prompted ChatGPT (or GitHub Copilot or Llama) to generate the code they needed to represent their models in either R, MATLAB, or Python, understand the code, and determine whether the response was correct.

Learning Goals and Purpose

Students use ChatGPT to help with coding and debugging so they can focus on the most important learning–mathematical concepts and the logic of the programming–rather than syntax. Correctly using ChatGPT is also part of the learning, and it will boost the learning of applied mathematics.

Assessment

Students are graded mainly on the math part of the assignments. They are not required to cite ChatGPT, since coding is the tool to do the numerical computations, but not a core learning outcome. Before ChatGPT was introduced into the courses, students used online resources to help with coding and debugging, which is not effective for beginners. The grading was the same now as it was then.

Faculty Reflections

It is very important for students to learn to work independently and to be lifelong learners, and this is what students practice in my courses.

Step-by-Step Directions for Students

Step 1	Solve the real-world math problem through knowledge of mathematical theory and concepts.
Step 2	Develop a model of the solution using R, Python, or MATLAB, with the help of ChatGPT (or GitHub Copilot, or Llama).
Step 3	Determine whether the ChatGPT response is accurate and refine prompts as needed to generate the correct answer.