EDUCATIONAL AI DEBUG ASSISTANT MVP

PROJECT PROPOSAL

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BACKGROUND/WHY?

Students rely on large language models such as ChatGPT or Gemini for programming assignments and debugging. Potential risks arise given this behavior. LLMs always generate complete and submittable solutions putting students to academic integrity risks. Students are also not learning the actual debugging process. Most importantly, institutions often resists the use of generic AI tools and flags them.

PROJECT OBJECTIVES

Build an education-focused AI debug assistant with anti-cheating constraint

- Help students understand error in code and how to debug them
- Gather data of students' opinion on the usage of our constrained AI tool
- Realize if students are willing to pay for academic safety along with learning how to debug

TIMELINE OF THE PROJECT

- December 22-24 - Prompt Design & Validating Project Idea
- December 25-27 - UI and API integration
- December 28-30 - Implement Anti-cheating logic & Education-constraints
- December 31 - Internal testing
- January 1-2 - Send to professors or peers for opinion
- January 3-4 - Complete MVP design

TARGET USERS

- Lower-Division CS students
- Students struggling on programming projects, assignments, or homework
- Students who feel uncomfortable using LLMs due to academic dishonesty

CORE FEATURES

- Education-oriented debugging

Explain errors, provide debugging strategies, never output full solutions.

- Safety mode

Detect homework or assignment-related inputs. Follow with explanation of debug process.

- Course-level constraints

Restrict syntax and data structures to students' current course level.

PROJECT SCOPE

Include:

- Web-based interface
- 2 Prompt Template (Debug/ Assignment Help)
- Free Usage Quota

TECHNICAL APPROACHES

- Frontend(Web/UI)

Use React/Next.js/Streamlit

- Backend

Apply existing LLM’s APIs

- Focus

Prompt Engineering
Detection Logic
Structure Enforcement