OSCAR Project Proposal

Project Title

LMS-AI Assistant: Revolutionizing Student and Faculty Support in Learning Management Systems

Project Summary

This project aims to develop an intelligent assistant to integrate into the university's Learning Management System (LMS). We will create a smart agent to improve the educational experience for both students and instructors. This tool will provide real-time support and personalized learning resources, streamlining communication and automating routine tasks. By doing so, we'll free up instructors' time for more meaningful interactions and provide students with immediate, 24/7 assistance.

Problem Definition

Students and faculty face significant challenges within current learning management systems. Students often have repetitive questions about course material, leading to delays and frustration. Instructors, in turn, are overwhelmed by a high volume of similar inquiries. They spend valuable time answering the same questions, summarizing content, or creating study guides, detracting from their ability to focus on teaching and mentorship. This creates a bottleneck in communication and can negatively impact student success and engagement.

Proposed Solution

Our solution is to build an **AI-powered assistant** that acts as a virtual teaching assistant within the LMS. This assistant will be trained on specific lecture content, including videos, readings, and slides. Using natural language processing, it will be able to:

- **Answer Student Questions:** Instantly respond to student queries related to lecture material, such as definitions, concepts, or examples.
- **Summarize Lectures:** Generate concise summaries of lectures, helping students quickly review key points and prepare for exams.
- **Create Structured Notes:** Automatically organize lecture content into "lecture articles" similar to popular online learning platforms, making it easier for students to revisit and study.
- **Support Faculty:** Handle the bulk of common student inquiries, allowing instructors to focus on complex questions, discussion, and curriculum development.

My Role and Methodology

My role in this project is to be the lead developer, working under the guidance of Professor Zahra Derakhshandeh and Professor Babak Esmaeili.

Here's a step-by-step breakdown of my approach:

1. **Phase 1: Research and Planning:** We will begin by researching and selecting the most suitable AI models for text analysis and conversational agents. We will also plan the system architecture and how the tool will integrate with an LMS.
2. **Phase 2: Data Collection and Processing:** We will collect and process sample data from existing lecture materials (e.g., transcripts, slides, and notes) to train the AI model. We will anonymize this data to ensure privacy.
3. **Phase 3: Development and Integration:** I will develop the core AI logic to answer questions, summarize content, and generate notes. I will also build the user-friendly interface that will appear within the LMS.
4. **Phase 4: Testing and Refinement:** We will thoroughly test the assistant with a small group of students and faculty. We'll collect their feedback to refine the assistant's accuracy and usability.
5. **Phase 5: Final Documentation and Presentation:** I will document the project's development process, findings, and results, which we will then present to the campus community and the OSCAR committee.

Expected Outcomes and Impact

Successfully developing this LMS-AI assistant will have a significant positive impact on the CSUEB community. We expect to see:

- **Improved Student Success:** Students will have immediate access to help, leading to a better understanding of the material and higher academic performance.
- **Enhanced Faculty Productivity:** Instructors will save time by automating repetitive tasks, allowing them to focus on teaching, research, and mentoring.
- **Innovation in Education:** This project will showcase Cal State East Bay's commitment to leveraging technology to create a more efficient and effective learning environment.

This project is an excellent opportunity for me to apply my computer science skills to solve a real-world problem within our university and contribute to the academic community.