CSE 366 Course Project Submission Description

Project Options Overview

For the CSE 366 course, students are presented with three exciting options for their course project. Each project is an opportunity to explore real-world applications of computer science principles, software development, and collaborative innovation. The project completed should be submitted in a GitHub repository, showcasing the development process, codebase, and documentation for review and grading.

Option 1: Machine Learning Application Project

Students choosing this option will embark on the journey of designing and developing a machine learning application. The core of this project involves the application of machine learning algorithms to solve a practical problem or enhance functionality within an application context. Students are encouraged to use Python web frameworks such as Flask or Django for the backend development to manage the application's data and logic.

Key Deliverables:

- A functioning web application integrating machine learning algorithms.
- Documentation detailing the machine learning model's choice, the data pipeline, the web application's architecture, and user interaction flow.
- A GitHub repository containing all source code, training datasets (if applicable), and deployment instructions.

Option 2: RAG (Retrieval-Augmented Generation) Application Project

This option focuses on the development of a Retrieval-Augmented Generation (RAG) application. RAG combines the power of retrieval-based techniques with generative models to produce more informative, contextually relevant responses in tasks such as question answering, chatbot development, and more. Students are expected to implement a RAG system that showcases innovative use of retrieval mechanisms to enhance generative model performance in a specific application.

Key Deliverables:

- A working RAG-based application demonstrating improved performance through retrieval-augmented techniques.
- Comprehensive documentation on the system's design, the retrieval and generation components, and the application's use case.
- A GitHub repository with all the code, dependencies, and setup instructions for running the application.

Option 3: Self-Proposed Project

Students who have a unique project idea that does not fit into the first two options can propose their own project. This option is ideal for students interested in exploring new territories, innovative technologies, or interdisciplinary applications. The proposed project must be discussed with and approved by the course instructor. It also should have the potential for academic or industrial publication.

Key Deliverables:

- A project proposal document outlining the idea, objectives, methodology, expected outcomes, and potential for publication.
- Upon approval, all deliverables specified for options 1 or 2 that align with the nature of the proposed project.
- A GitHub repository hosting the project code, documentation, and any other relevant materials.

Final Submission Guidelines

All projects, irrespective of the chosen option, must be submitted through a GitHub repository. The repository should include:

- A README.md file that offers an overview of the project, setup and installation instructions, and a guide to navigating the repository.
- Source code organized in a logical and navigable structure.
- Documentation covering the project's design, development process, and user guide.
- Any other relevant materials such as datasets, deployment configurations, or demo videos.