Project Proposal: Swift QuizApp ChatGPT

Project Description

Problem to be Solved

- Existing ITS tools are not targeted for mobile devices or on-the-go studying.
- Ability to answer basic questions from students to avoid waiting for answers in Piazza.
- Better recommendations about what to study through ChatGPT.

Proposed Solution

App Functionality

Currently, the Swift mobile application delivers simple quizzes. We would like to expand upon the utility of the app by adding a chat feature. This chat feature allows students to have a conversation with an AI trained with textbook material for the ECE2026. This allows students to have basic signal-processing and theoretical questions answered automatically by the AI, instead of waiting for answers from Piazza or email.

Features to work on:

- Integration with OpenAI's GPT-3 API to leverage its advanced NLP capabilities and vast knowledge base
- Ability to fine-tune the GPT-3 model to better understand and answer questions in the ECE2026 domain
- Design of a conversational flow to guide students through asking questions and receiving answers in a logical manner
- Implementation of methods to verify the accuracy of the answers provided by the GPT-3 API
- Development of a user-friendly interface for students to interact with the chat feature
- Security and privacy considerations for handling sensitive student data, such as their questions and answers

Benefits Of This App

- Convenience: Quick and easy for students to use since the majority of them are on their phone already.

- Utilizes the powerful GPT-3 to help make tough concepts very simple. Since professors and lecturers may not always be available to make students understand the concepts.
- Time-saving: Students can get answers to their questions instantly, without having to wait for a response through Piazza or email.
- Improves retention: By allowing students to have access to answers to their questions in real-time, they are more likely to understand and retain the information.

Potential Problems and Pitfalls/Other Areas for Research

1. Training GPT-3 with the material specific to the textbook provided. Although GPT-3 has a considerable amount of knowledge even in signal processing, it needs to narrow down to the textbook information. However, the textbook has a lot of words and it may be difficult to train the model with so many words at once.
2. GPT-3 is also not a free API. Every request has a small fee (approx 0.002$ per 1000 tokens). Hence we may shift to a new model, if the model is free, and gives a similar amount of accuracy as GPT-3.

Implementation

Software and Development Tools

- File management and version control
    - Git/GitHub
- Programming languages
    - Mostly Swift
- Database management
    - Cloud-based MongoDB
- API for communication
    - NodeJS

Project Goal For This Semester

We want to create a convenient chatbot that can answer student questions based on ChatGPT's answering mechanism. By creating it in Swift, we could merge it into the main QuizApp to reach a wider number of students.

Anticipated Milestones	**Date Due**
Team Accustomization	Week 3 (02/02)
Swift Research	Week 4 (02/09)
ChatGPT Research	Week 5 (02/16)
First Line of Code	Week 6 (02/23)
Working on prototype	Week 7 (03/02)
Working on prototype	Week 8 (03/09)
Prototype	Week 9 (03/16)
Working on Main Project	Week 10 (03/23)
Working on Main Project	Week 11 (03/30)
Main Product	Week 12 (04/06)
Refactor and Working on integration	Week 13 (04/13)
QuizApp Integration	Week 14 (04/20)
Presentation	Week 15 (04/27)

Group Membership

Task Assignment and Participation

Responsibilities

- Max Everest
    - IOS Front-end, autocomplete integration.
- Shreekrishna R Bhat
    - Working on adding API endpoints, and possibly working on a simple front end.
- Alvin Fabrio
    - NodeJS Backend, etc.

Member Skill Sets

Member	**Time Commitment and Credits**	**Skills and Interests**
Alvin Fabrio	6-8 hours/week (2 credits)	Java, JavaScript, React, Python, HTML/CSS, Android Studio
Max Everest	6-8 hours/week (2 credit)	Java, Python, MySQL, Oracle Cloud, Java/Typescript
Shreekrishna R Bhat	6-8 hours/week (2 credit)	JavaScript, React, NodeJS, Express, MongoDB, Java, Python, HTML/CSS

Communication Resources

- Weekly meetings: Tentative
- Google Drive: meeting notes, learning resources, and other shared documents
- Microsoft Teams for quick communications and meetings
- Trello Board: to keep track of tasks