

# VIP-ITS-Chatbot Spring 2024 Project Proposal

## Group Membership:

| Member           |                |  |
|------------------|----------------|--|
|                  | Skills         |  |
|                  | Credits        |  |
|                  | Responsibility |  |
| Obinna Nwachukwu | Skills         | Java, C#, Kotlin, Python, Android Studio, GPT  |
|                  | Credits        | 1  |
|                  | Responsibility | Look into prompt engineering, how to make a good prompt and reduce hallucinations. Front end work. |
| Vineeth Nareddy  | Skills         | Java, SQL, Android Studio, C/C++, Python   |
|                  | Credits        | 1  |
|                  | Responsibility | Connecting old and data we have to GPT. Front end work   |
| Nicholas Jaimes  | Skills         | Java, Python, React, Kotlin, SQL   |
|                  | Credits        | 2  |
|                  | Responsibility | Look into API and its implementation into the languages that we are using. Frontend work           |

## Project Timeline:

**Week 1- 4:** Team formation, proposing project ideas, planning the project.

**Week 5 - 6:** Research the GPT4 API, its features and limits, find a good programming language for the backend (python?), and understand how to make a good GPT prompt

**Week 7:** Start working on the backend, make a new github repo for the project

**Week 8:** Finalizing GPT4 API

**Week 9-10:** Connect data we already have and new data to GPT

**Week 11:** Come up with and finalize the prompt we will be using

**Week 12-14:** Connect the frontend -> React Native

**Week 15:** Finalize everything, make final edits

**Week 16 - 17:** Final Presentation

## Project Goal:

Milestone 1 (Nicholas Jaimes): Completion of implementing the ChatGPT API into the system that we are using. We want to focus on implementing GPT-4, as previous semesters have only done GPT-3.5. We want to make the API easy to use for any part of the project.

Milestone 2 (Vineeth Nareddy): Connecting the textbook, Piazza, and any other useful data to the ChatGPT API. Therefore, the system will be able to use a wide range of data to come up with the best result to help the user.

Milestone 3 (Obinna Nwachukwu): Finalize a prompt that would be best for getting the most appropriate data for the user. We want the prompt to prioritize information from the textbook, since that is the most accurate.

Milestone 4 (All): Implementing this summarizer into the App we have so far.

In the end, we hope to have a system that will take in a user prompt (Ex: Summarize how \_\_\_\_ works) and give a summary of information from the textbook that the user wants.

## Project Description:

The problem we are trying to solve is that it can be difficult to learn a large amount of knowledge from the textbook, especially when students are limited on time from taking other courses. This is most appropriate for Signal Processing, since it is known as one of the harder classes that Electrical Engineering students have to take. We hope to make a system that will make it easy for students to immediately get the most important information about a certain topic. This way, students will be able to learn all the information more effectively and perform better on their exams.

## Proposed Solution:

We want to make learning more accessible through the use of AI. We want to summarize information from textbooks in order to create a chatbot that can answer user questions in a way that is concise but conveys full understanding of the topic. We do this by ensuring the model is trained on class approved material and only recites information from the textbook. It will only use its prior knowledge when the textbook does not have an applicable answer, and will inform the user that the information it is giving is general advice, and it may not be fully applicable to the course.

In pursuit of accessibility, we also want to make our project available in app form and on the web, so anywhere at anytime, a student can access a "Virtual TA" that can summarize difficult sections in a textbook, give them example problems to work on, or guide them with a solution to a problem on their homework.

## Implementation:

We plan to use Python to do the backend work, since most AI work involves Python. In addition, we plan to share a repo on Github and work with GPT-4 API for this project. As far as implementing, we are still trying to figure out the limits of what we can do with the GPT-4 API in the next two weeks and will work from there. But we will try to do our best in following the order of our timeline. First, we will finalize our dataset for our project and expect this to take several weeks. Then, we will finalize the prompt we will be using and will do this part for one to two weeks. Finally, we will spend the next couple of weeks working on frontend stuff and making a proper API where the user can enter a prompt and will receive a response. As we put this all together in the end by making final checks and our presentation, our implementation of this project will mainly be based on our timeline above.