

VIP ITS Spring '23

Quest Game Backend
Project Proposal

Group Membership

Member		
Sean Peng	Skills	Python, Java, HTML, CSS, JavaScript
	Credit	1
	Responsibility	Backend GPT API question generation by concept and difficulty
Rish Desai	Skills	Python, Java, HTML, CSS
	Credit	2
	Responsibility	Game Backend Timer Feature and Question Difficulty
Nicholas Tan	Skills	Java, Python, C++, Javascript, CSS
	Credit	2
	Responsibility	ChatGPT integration and Game Frontend
Wei Sheng Tan	Skills	Java, Node, Python
	Credit	2
	Responsibility	chatGPT features such as new topic-specific question and answer generation

Project Goals

Our goal for this semester is to gamify the quiz app as an alternate mode for students to face challenges within time constraints. Our objective is to create a webpage that allows students to practice topics of their choosing. By intelligently choosing a progression of problems based on their related concepts and difficulty, we aim to guide students from foundations to mastery. To take it a step further, our second goal is to provide AI-generated hints during the quiz game to help the students clarify any doubts or unknowns.

Project Timeline

Week 1-3: Team formation, proposing project ideas, and planning the project.

Week 4-5: Research into current existing Repos and datasets

Week 6-7: Plan how we want code to be structured and any additional research components we would still want

Week 8 - 13: implementation of each of the features

Week 13-14: Demo

Week 15: Testing, adjusting, and optimizing accordingly.

Week 16-17: Final Presentation.

Project Description

We are making an interactive game that students can play to study Signal Processing. This game would allow students to travel to different locations on the map that corresponds to a given topic. Within each topic, students would have a series of questions they can answer to accumulate points based on difficulty. We will also try to integrate ChatGPT to give hints if the student needs help.

This is the backend proposal. Although we have two separate proposals for the frontend and backend, our work is largely interconnected and we will be using the same repo. We will come together towards the end of the semester to combine our work for the demo.

Rish's Contributions: I will be working on sifting through the ITS database and finding the data associated with each question. This will be the time statistics. From there, I will create a way to decide how long users should be given to answer a question as the timer on the question.

Sean's Contributions: I will be working on the backend. Using the database, I will group questions into different topics and concepts, as well as difficulty. I will be working on using the GPT API to fine tune our model based on our data. Our model will generate questions with certain concepts and difficulties so that students can build on previous concepts they encountered and tackle more difficult problems as they progress through the game.

Wei's Contributions: I will not be working on the game. I will be focusing on researching and developing new useful features that chatGPT API can provide for college students. Possible features would be using chatGPT to generate new questions with answers from the textbook of that class for that specific student for the topic that he/she is weak in. (Follow up, if student votes it as a helpful question, then could consider adding question into database pool)

Nicholas' Contribution: I will be working on integrating ChatGPT API to be part of the game. I will be looking into some ways to implement this because ChatGPT still has an unreleased API at the moment. I will also be helping with the game side of the quiz app wherever necessary. Data refining is also needed for this game since some of the questions does require a lot more time to answer.

Potential Problems and Pitfalls

- Integrating ChatGPT into our game could be more complex than we expected.
- AI-generated hints may not be completely accurate
- Inconsistent results from the AI
- Creating a game from scratch could be a huge issue as everyone does not have experience in making any sort of game.
- Some questions may not suit the game mode due to the time constraint

Implementation and Collaboration

Primarily we will be using JavaScript to develop our game. We will be collaboratively working through this project using GitHub. In order to get our data to get the different

features for the backend processing, we will be using the MySQL Database. Our ideal template for this project is that we would be able to gather data from the MySQL Database to structure the way the questions are delivered to the student and then as they continue to answer the questions we will have a ChatGPT integrated to allow for the students to ask any questions that they may have. The frontend side will be able to create a way for the user to navigate through the quest game board.

From a collaboration standpoint, we will aim to have weekly meetings with each other either virtually or in person. We will stay in contact with our team through Microsoft Teams. Additionally, with GitHub, we can work on this project together by making a new Repository.