

IM3080 Design and Innovation Project (AY2023/24 Semester 1)

Individual Report

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Group No: 6

Project Title: ARvatar Chat

Contributions to the Project (1 page)

Backend

- ❖ Connected the application to Firebase's Firestore database.
- ❖ Worked on the backend scripts that performed CRUD on user profile data, custom avatar data, conversation data and message data that is stored in Firestore database.
- ❖ Helped with login and register functions using Firebase Auth package.
- ❖ Worked on functions that enable searching for other users by their email, and sending a friend request to that user.
- ❖ Worked on a messaging feature similar to telegram, with message timestamps by creating message data and updating conversation data.
- ❖ Worked on saving users' custom profile to Firestore database, such as username, status and 3d avatar.
- ❖ Worked on backend part of 3d avatar customisation, allowing users to save their unique avatar to the Firestore database.
- ❖ Worked on retrieving sender & recipient's 3d avatar from Firestore database and displaying them in normal chat and AR chat.

Frontend

- ❖ Worked on displaying 3d avatars properly, with their unique accessories placed correctly on the avatar's body.
- ❖ Worked on allowing users to choose skins and accessories for their 3d avatar from a list of choices.
- ❖ Worked on message bubbles displaying text correctly, stretching to fit text etc.
- ❖ Worked on custom emojis which can be displayed properly in text messages.
- ❖ Worked on an emoji menu to choose and send emoji (similar to telegram).
- ❖ Worked on mapping specific custom emoji to animations that the user's avatar will perform (laughing, angry etc.)

Reflection on Learning Outcome Attainment

Reflect on your experience during your project and the achievements you have relating to at least two of the points below:

- (a) Engineering knowledge
- (b) Problem Analysis
- (c) Investigation
- (d) Design/development of Solutions
- (e) Modern Tool Usage
- (f) The Engineer and Society
- (g) Environment and Sustainability
- (h) Ethics
- (i) Individual and Team Work
- (j) Communication
- (k) Project Management and Finance
- (l) Lifelong Learning

Point 1: Problem Analysis / Modern Tool Usage

When we started, I had little experience in programming a chat application, not to mention one with 3d character customisation and animations. As my role in the team was mostly backend-based, I had to analyse and break down the functions required in our chat app, including contacts system, messaging system and avatar creation system. With the help of my team members, we managed to develop the functions using tools we picked up along the way. I also improved my debugging skills and code practices while working on app features. As our app is developed on Unity Engine to make 3d design easier, I had to hone my Unity skills and also learn to use backend technologies like Firebase to store data, learning github as well to collaborate with my teammates. As a result, I am more comfortable working with technologies I have not used before and figuring out how to solve specific issues in the code.

Point 2: Individual and Team Work / Communication

Initially, I had never worked on software engineering with a large team before, only with small groups of 2-3 people. Therefore, I had to learn to collaborate with many others to develop a single app. It started out messy, but we managed to discuss our strengths and weaknesses and what we would be most proficient at when developing a chat application. I realised that even though I might not know everything about app design, I could work on the parts which I am comfortable with, such as programming the backend features of the app. Some of my team members who are more proficient in design, 3d modeling and animations could then work on these features and pass them to me. I also learnt to use collaborative tools like Github to collaborate and Trello to plan out tasks and schedules. I developed my communication skills by listening to what my teammates working on design had to say, and providing feedback on what is required to easily link the frontend and backend.