Project Experience

Climate Awareness

ENSE 400/477

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The Purpose and Objective

The purpose of this project is to create a digital habitat/community of practice for individuals who share the concern/interest in climate change. The objective is to develop an application to support the United Nations Sustainable Goal 13: Climate Action, focusing on target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. This will allow users to have access to a multitude of resources such as articles and videos, chatting with users, locations, forum posts, carbon footprint calculator, tips for reducing carbon score, and motivation by acquiring achievements. With these resources the objective would be to make the user's local area more environmentally friendly and to spread awareness of climate change around the world.

Stakeholders

This project is intended to target highschool/university students and environmental experts/educators. Highschool/university students are our main target as this demographic has a better worldview of how greenhouse gasses have effect on the planet presently and to have them practice environmentally safe actions. Environmental experts/educators are a sub-target as they can provide guided learning and knowledge on the application to the highschool/university students.

Planned Timeline

For the first half of the capstone with having to learn dart programming language and Model view view-model architecture it took a few months to adapt to make it comfortable. Most of the time was spent building out the user interface and logic to work together and then refactoring the code to make it cleaner and prettier, this is by following the fail fast method. The second half of the capstone where members are more comfortable with the new language and architecture, time was spent with continuing to implement features to meet the expectations of the minimum viable product while still following the fail fast method.

What actually occurred

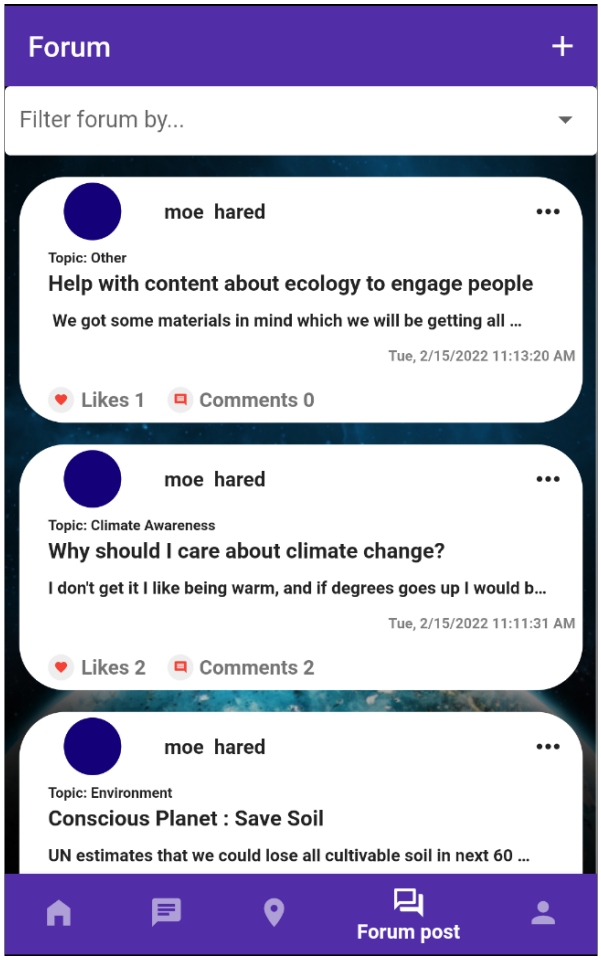
The following are what we have accomplished so far.

- Community post feature allows users to post informative videos and articles to the community.

- Chat functionality that allows users to communicate with each other.
- Carbon footprint calculator, a tool to help lower their carbon footprint and show tips to reduce their carbon footprint as well as showing achievements to motivate users.

- Forum post functionality to allow users to post questions and have other users interact with posts by liking and or commenting.

We were able to accomplish 75% of what we have planned to do. We have implemented the community post feature, chat feature, forum feature, carbon calculator feature with tips for reduction as well as achievements for gamification. We were not able to implement the car pooling feature as we had trouble in this phase. The carpooling feature was supposed to elaborate off the location feature, where users can see nearby carpools.



What went well and why

We chose Flutter for our project and it set us up for total success. Firestore and Flutter are exceptionally well documented and have thousands of communities and this really helped our development. Compared with other frameworks like Kotlin Multiplatform (KMM) and React Native would have had a longer learning curve and less success rate in production.

We managed this project utilizing Agile Scrum and it went really well, particularly with how well the group members got along with one another and advanced to fill out their

roles in the group. Weekly Scrum meetings helped us stay on track and identify tasks that needed to get done on a weekly basis. We, as a group, advanced to become energetic about this project and gave us a collective objective to work towards.

What can be improved and how

The project file structure can be improved by grouping views, viewmodels, and any other related model classes together; grouping these together will allow the project file structure to be more organized resulting in easier navigation to find files. Improving the filtering for misinformation/disinformation in the application, our filtering method is hard coded as a long file of words which a function checks any user inputs against. This can be improved by implementing machine learning and using sentiment analysis to train a model that can be used to moderate the user posts and or actions. Improved user interface and user experience, making this application low threshold and high ceiling by making user actions more discoverable and understandable.
The testing done in this project is purely manual testing, which automated testing would save us more time for development. Setting up a proper CI/CD pipeline would be an improvement to help us with testing and debugging our code.

Advice for future project teams based on our experience.

- Setting up a proper testing suite. This will help with debugging the code and saving a lot of time for development.

- Agile fails fast often during the first part of the capstone. This will help with development time as you will not feel behind if you start coding in the second half of the capstone.
- Adapting to a new programming language,environment, or architecture. This can be difficult when starting a project as time will need to be spent learning the syntax of a new programming language,architecture, or environment. Adapting to it fast can speed up development time for the project.