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Design Review: Sprint 1
CS 461
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Team 36: Pour Soul Systems

The Pour Soul System team is using Flutter with AWS to build a mobile application for data analytics. The data they are using will be collected and provided to them so they only need to design the application that uses it. The team has been talking to local bar owners to get suggestions on how they should design their app. I think this is a good idea because their project partner has emphasized the importance of making the data accessible and convenient for its users. The decision to use AWS and Flutter is also good because the cross-platform capabilities will allow them to reach a large audience quickly. I would like to have seen more in terms of a functioning app demonstration, but I respect that the team spent time researching for a portion of the first sprint.

One concern I have about this team design choice is that they are using the NoSQL database MongoDB. MongoDB is a very powerful database, but it is non-relational which can cause slowness on large data sets. This may not be a problem, though, so I would suggest the team research MongoDB to make sure it is the best choice for their application. Also, it sounds like this team has conducted most of their research on local bars. If possible, I would suggest reaching out to other bars online to maximize their feedback.

My project team is also developing a cross-platform app using Flutter which would be a good topic for collaboration. My team is also using a NoSQL database similar to MongoDB. We have little experience with non-relational databases so it could be beneficial for both teams to share resources related to NoSQL databases. Although My team is using Google Cloud Platform and this team is using AWS, it may be beneficial to share our experiences with cloud hosting because they may be more similar than we think.

Team 37: Remote Learning

This team is working on an online platform for remote learning. Their goal is to create a platform that allows for a collaborative environment between teachers, parents, and students. It will offer features related to private and public chat, homework, assignments, performance metrics, and teaching. It looks like this team has been working hard on the interface of the program. I suggest that this team focus on laying a solid foundation for each of their features before committing to developing the interface. Otherwise, the team may have to rework the interface later if it doesn't work.

So far, this team has built a basic interface for their app and implemented user authentication. The team is using Firebase for their application and is uncertain about using Firebase account authentication. I suggest that this team use Firebase authentication because it

works well and handles the security. I also think that this team should spend some time thinking about how they will implement their metrics. The team mentioned using "time spent on a problem" as a metric for teachers to gauge understanding. Metrics like this should be implemented with caution because they are not always reliable. For example, a student could step away from their computer with a problem active and skew the data.

My team is also working with Google Firebase. This would be a good point of collaboration because Firebase has many useful features. We could share resources on how to use Firebase and Firestore. This team is using the Zoom SDK. Although we are not using this, we are using other tools such as the Flutter SDK and several online APIs. We could also share resources about using XCode because several students on each team are unfamiliar with MacOS.

Team 38: AR Instruction Manual

The team is currently focusing on image recognition and edge detection to identify what the phone is looking at. They are using tools such as Vision, ARKit, SciKit, and Swift to build these features into a mobile app. This seems appropriate because they are focusing on developing for IOS and image recognition is among the largest hurdles for them. The team has already managed to implement basic edge detection and even managed to map a plane to a surface. I do not have enough experience with image recognition to provide insight on how this team can improve, but I think their next step should be to use their current plan detection to map colored shapes to different parts of the object. This will make it easy for them to start building the instruction system.

I think this team has made impressive progress in the last three weeks. They have built a solid foundation to build their app on. One suggestion I have is to make sure the app can handle switching between identifying different objects without issues.

My project team is also working on mobile development. Although we are using Flutter for cross-platform development, we may still be able to collaborate on mobile development. The instruction manual will also likely require a database for storing the instructions. My team is also working with databases so we could collaborate on designing database schema.

Team 41: Tree Segmentation from Multispectral Images

The goal of this project is to identify tree coordinates from aerial images. The images are multispectral, meaning they involve an infrared component. They are using machine learning to identify the trees and return their coordinates. They haven't yet decided how they will implement their neural network or how they will train it. Techniques they are considering include supervised learning, weekly supervised learning, and unsupervised learning. They plan to research these techniques more before making a decision. Additionally, their project will require them to identify dirt, roads, grass, wood, bark, and needles as non-trees in images.

I like their decision to use Python libraries such as Tensorflow because they are good for quickly building powerful neural networks. They are aiming for 95% accuracy for tree identification. This seems like a difficult goal to reach, but I think it is good that they aiming high. Because this team is waiting for more images, I think it was clever of them to use "data augmentation" to artificially expand their data set. They should be careful with this in the future, though, because overusing this technique may slow down training without contributing substantially to the overall performance of the neural network. Overall, this team seems to be on the right track.

I do not have much experience with TensorFlow or neural networks so I would not be able to collaborate with them on this aspect of their project. I have worked in Python, though, so I could work with them on how to use Python if needed. I don't know how this team is managing their dataset, but if they are using a database then that would be a good point of collaboration. Otherwise, we could share general resources related to data management and organization because my team will also be working with large amounts of data.