EE/CprE/SE 491 WEEKLY REPORT 01

Availability Prediction Based on Multi-Context Data

Week 3 Report

09/27/18 - 10/24/18

sdmay19-33

Client & Advisor: Goce Trajcevski

Team Members:

Justice Wright: Report Facilitator

Shane Impola: Scribe

Noah Chicchelly: Meetings and Communications Facilitator

Nick Schmidt: Software Systems Engineer

Tristan Anderson: Network Systems Engineer

Brendon McGehee: Hardware Systems Engineer

Weekly Summary

This week was full of advancements on many fronts. Most of us conducted research into our assigned focus areas and/or did some entry level testing for familiarity in the Flutter, AWS, and hardware focus areas. The scope of hardware requirements is rapidly being closed in on, as a transceiver module was discovered that could help connect our sensor management units to our central data hub. While most of this might seem uneventful these lay the groundwork and vision for our major goal this semester: gathering live sensor data, storing that data in AWS RDS instances, and accessing that data with an app, thus interconnecting each sub-teams focus areas. This is the guiding goal for the next few weeks, and this week's accomplishments show us that we are on pace to meet this goal.

Past Week Accomplishments

Researched Networking Component for Hardware - Brendon

- Brendon continued to conduct research on a networking component to transfer sensor data from different devices and looked into the cost of various networking components. Made a decision on the NRF24L01 Transceiver Module with a cost of $11.98 for ten modules or $1.19 per module.
- Brendon evaluated how the NRF24L01 Transceiver Module works with arduinos. Figured how what would be needed to program the Transceiver to transfer data from sensors.

Researched Networking and Dataflow to RDS Instances with Lambda - Justice

- Found a tutorial for connecting a raspberry pi to AWS instances. Ran through the AWS console side, need to acquire a Pi to test with the device.
- Researched Lambda functions for use in manipulation of AWS DB.
- Worked through simple Lambda tutorials for AWS.

Began Learning Flutter for App and Looking Into App Communication - Nick Schmidt

- Began learning Flutter for use on the app. Downloaded and began experimenting with the API creating apps.
- Looking into libraries and methods of communication for the app, plan to have a working test version ready by next week.

Continued research into the Servers and Database aspect of the project - Noah

- Doing research into AWS (Amazon Web Services) to further investigate how we want to proceed with communication between hardware and front end.
- Working with Shane and Nick to finalize the end points and queries we want to be working on as a starting point.

Researched server-side frameworks with database features - Shane

- Looked further into the different options for how we can set up the server, we are looking at using the REST API at the moment
- Researched how database relationships work, what relationships we need to set up our database, what tables we need to properly implement our endpoints

Read about socket programming on Raspberry Pi, started to learn flutter - Tristan

- Since Raspberry Pi uses C, I have started to use knowledge from 489 to develop server side code for the Pi.
- Purchased an online course to begin learning flutter to help Nick with the frontend of the project.

Hours Report

Team Member	***Weekly Hours***	***Total Hours***
Justice Wright	6	19
Shane Impola	6	13
Noah Chicchelly	6	19
Nick Schmidt	6	17
Tristan Anderson	6	19
Brendon McGehee	6	20

Upcoming Week

Brendon

- Evaluate how all hardware components will work with each other. Look into what data from the sensors will need to be transferred using the NRF24L01 Transceiver Module.
- Finalize arduino IDEs intake sensor data and transfer that data to the networking component.

Justice

- Transmit data of any kind from Pi to AWS
- Work with Brendon for aggregating data from sensors to Pi
- 2 weeks out we want to be able to send sensor data from the Pi to a meaningful DB.

Noah

- Implement queries, POST / GET requests being able to receive and send to front end.
- Have the back end (server side) architecture setup to implement many new features to come as the scope widens in our project.

Nick Schmidt

- Fully learn and create a barebones communication app with Flutter.
- Have working communication between the app and the test server.

Shane Impola

- Work with Noah to set up the server hosting
- Set up server and database backends, begin configuring them

Tristan Anderson

- Continue working with Nick to understand and utilize Flutter.
- Utilize our purchased transceivers to communicate with the Raspberry Pi.