EE/CprE/SE 491 Weekly Report 5

11/4/19 - 11/14/19

Group Number sdmay20-23

Project Title: Multi-Context Shopping Optimization

Client & Advisor: Goce Trajcevski, Ashfaq Khokhar

Team Members/Role: Max Garton - Meeting Lead, Arnoldo Montoya-Gamez - Deadline Manager, Ethan Shoemaker - Issue Tracker, Karla Montoya - Testing Specialist, Jesrik Gomez - Public Relations, Nate Wernimont - Meeting Scribe

---

Weekly Summary

This week the team began physical prototyping and development of the sensor module (the weight sensor and raspberry pi) that will measure users' inventories. We also began to create the API for the services that will be implemented for the project by defining the API methods and paradigms for the different use cases. In addition, we created a basic NodeJS server for notification purposes that helped test notifications from our Android application. The notification server communication uses an encrypted HTTPS connection. We also created basic Android activities, which will later be used in our front end user interface.

Past Week Accomplishments

Accomplishments during the week of 11/4 - 11/11:
- Began creating prototype implementations of several components of the overall system
  - Weight sensor module: Tested weight sensors and R/T module functionality (Ethan)
  - Weight sensor module: Created an android application that communicates with the raspberry pi via WiFi socket (Max)
  - Android application (project UI): Created an android application that receives notifications from a remote server (Arnoldo)
  - Iterated on the API (Jesrik and Nate)
  - Worked on the Technical Challenges video (Jesrik and Nate)
  - Iterated on the matching algorithm (Nate)
  - Created a list of items on Android, which will be used for our shopping list (Karla)

Pending Issues

- Max Garton: N/A
- Arnoldo Montoya-Gamez: N/A
- Ethan Shoemaker: N/A
- Karla Montoya: N/A
- Jesrik Gomez: N/A
- Nate Wernimont: N/A

Individual Contributions

Arnoldo:
- Prototyped a notification on branch called App-Notification
- Found a way for our android app to communicate with basic server using an encrypted connection (HTTPS)
- Using the above items, the following was done:
  - Created simple nodeJS REST Api server that checks for changes on a file, which simulates changes in our inventory.
  - Our android app makes requests to this server every X seconds (5 seconds in my case)
  - If the android app senses a change in the server, the android app sends a notification to the user.

Ethan:
- Experimented with the newly received weight sensors and R/T modules

- ○ Discovered that the R/T modules can only send discrete (digital) signals
  - ○ This may work well with the 4 pin ADC I researched since each R/T pair has 4 pins outs that can be used simultaneously
- ● The weight sensors need to be more thoroughly tested
  - ○ Although, it is a simple device that works as intended it may not be useful for our application as we are looking for a bit more precise of a measurement of the weight

Jesrik:
- ● Gathered more requirements for inter-process communication between API services
- ● Identified and defined list of technical challenges in hardware and API designs

Karla:
- ● Created a basic Android app activity, which is a list of items. Activity will be used for list creation and deletion.

Max:
- ● Began developing prototype program for communication between the raspberry pi and android device via wifi socket (this will eventually be part of the set up process when the user sets up a new sensor module).

Nate:
- ● Iterated on the API
  - ○ Seeking feedback from other teams on their needs
- ● Defined and documented the technical challenges related to our project (with Jesrik)
- ● Re-considered our algorithm that matches items to stores
  - ○ Previous version was incorrect. When a store is chosen, one needs to consider all of the items that were previously unchosen that are cheaper, but weren't cheap enough to cause a selection of the store.

Name	Individual Contributions (Quick list of contributions. This should be short.)	Hours This Week	Cumulative Hours
Arnoldo	Prototyped notifications and found way to communicate through encrypted networks using android.	10	37
Ethan	Tested weight sensors and RF receiver transmitters	6	34
Jesrik	Identified inter-process communication requirements, and technical challenges for hardware and API design	4	31
Karla	Created a list of items on Android, which will be used for our shopping list	7	31
Max	Began developing program on the raspberry pi and Android to set up the pi (communication via socket over wifi from network created by	7	45

	the pi)		
Nate	Iterated on the API and re-considered the matching algorithm	6	33

Plans for Next Week

- **Arnoldo**: Research Google Maps platform and places SDK for the Android application
- **Ethan**: Order different weight sensors and ADCs. Develop communication scheme for between the Android App and Sensor Module for WiFi config
- **Nate:** Standup the databases and start implementing API services
- **Max:** Continue to develop the prototype Android & raspberry pi socket communication, hopefully configuring the pi's wifi network settings from the Android device.
- **Karla:** Continue working on the android application
- **Jesrik:** Continue developing API services

Summary of Weekly Adviser Meeting

In our meeting with Goce on 11/14/19, we walked through our design document, receiving feedback and recommendations for improvement. Discussion topics included the need for us to explain the data sources that the project will rely on, including how the data will be obtained, stored, and used. Goce mentioned that we need to touch on team logistics in our presentation, such as our meeting frequency and mediums of communication.