CpE/EEE Senior Design

Team 2 # Weekly Progress Report 10/18/2023

Team Members:

Xavier Howell	Ahmad Saeed
Dev Gohil	Eric Zizumbo

Group Meeting Minutes: 10 minutes

Summary of Team Tasks Assigned:

1. Major tasks assigned this week have been to receive and develop the additional hardware components. This includes the bluetooth module and haptic feedback. Getting them to work with the STM32 and code for app development.
2. Developing the app to be at the initial testing phase.
3. Eric has also redesigned and printed the cases needed to house our hardware components in an even smaller package.

Summary of Team Accomplishments:

1. Made the application functional and verifying for the Cane Id on the server and downloading information to/from the server corresponding to the Cane ID.
2. Created the Map APi key and storage for using the device location and storing it on the server for multiple devices to access.
3. Modeled a new design for the handle.

Tasks Assigned for Next reporting period:

1. Layout map of design for hardware and wiring diagram for cane use.
2. Power source testing.
3. Connecting the app with STM32 module once the app is navigable in simulation

Issues:

1. Bluetooth module doesn't work with ios devices
2. Information is not correctly being updated to the server and upon downloading form the server removes the information but stores the cane id
3. Size constraints.

Please include supporting documentation

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Individual Summary (cont.)
Name: Xavier Howell

Accomplishments this reporting period:
1. Eric created our new handle design from my last weeks sketch up
2. Wiring diagram for cane use sketched up
3. Reworked code for better reading of HC-SR04 sensor
4. Finalizing battery design for non removable power and permanent cane use.

Issues:
1. Need a way to testing ranging for new code on HC-SR04

Tasks Assigned for Next reporting period:
1. Get bluetooth module working properly and show ranging on app
2. Order wiring bundles needed for soldering
3. Order charging module and batteries
4. Build a LED setup to test sensor for ranging(red=detected object close...etc)

Please include supporting documentation

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Individual Summary (cont.)

Name: Ahmad Saeed

Accomplishments this reporting period:

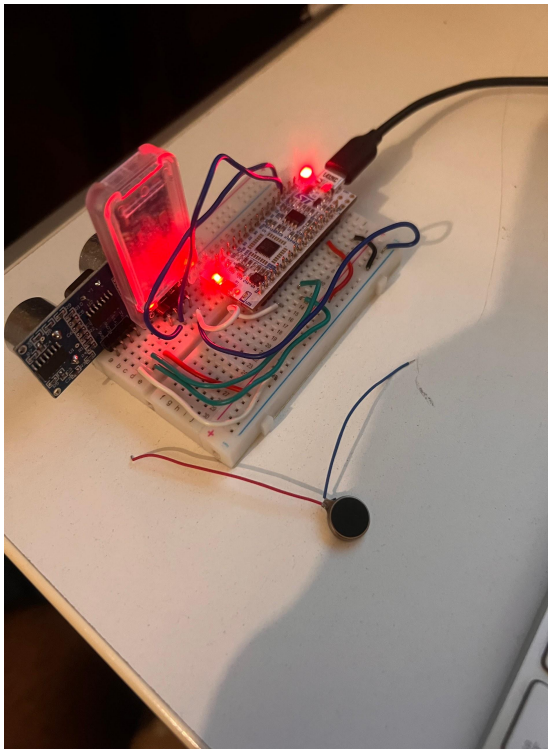
1. Working on the HC-10 bluetooth module on the STM32-L4 series board. Still had issues debugging; been very busy with midterms and other assignments, couldn't put the full effort into this week. This module is compatible with iOS devices. Handed Xavier the HC-05 which works with Androids.

Issues:

1. Configured the bluetooth module and was able to connect to it using my iPhone but has issues trying to receive data to it.
2. Another issue was the vibration motors I ordered aren't compatible without design. There are only two wires; held constantly high.

Tasks Assigned for Next reporting period:

1. Trying to display data on the iPhone from the STM32 board.
2. Buy new vibration motors



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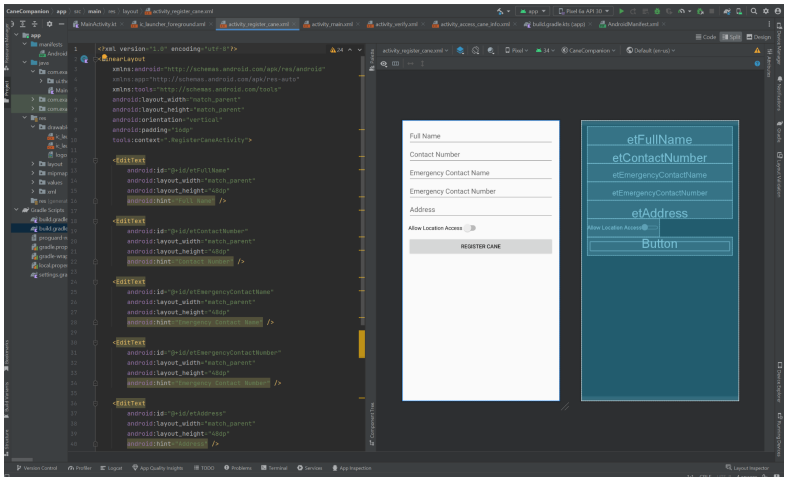
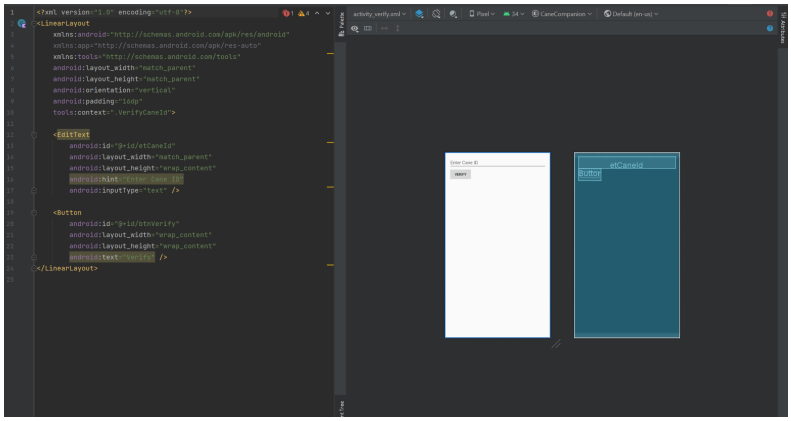
Individual Summary (cont.)
Name: Dev Gohil

Tasks assigned this week:
I took the task to set up the user Authorisation and server setup for the information storing from the app and have a simulation of the apps screens working together. Also to have the server be able to communicate with the Maps API to store location of the device.

Accomplishments this reporting period:
The application now stores to and retrieves from the server information corresponding to the cane Id entered manually which includes Name, Contact, address, Emergency contact information, location if allowed to share while registering the device.



Screen to register to the server



Screen to verify the cane Id on the server

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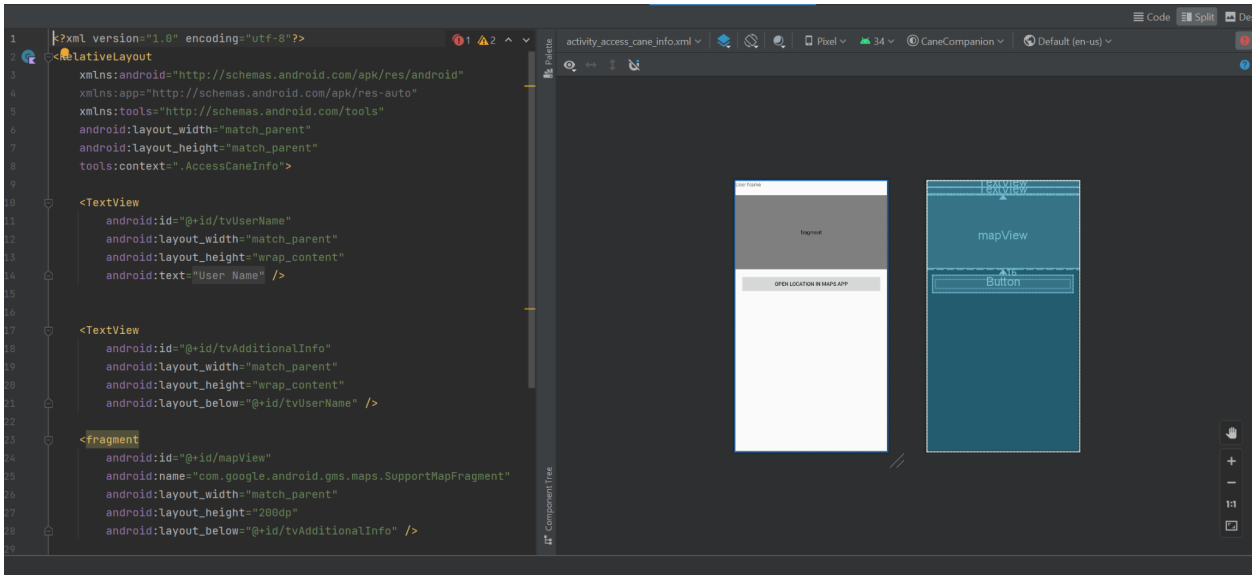

Layout of information displayed from the server with a map snippet

Issues:

The server accepts information but loses the accuracy while communicating to the server upon checking the server. When verifying the cane id for retrieving the information the server unloads the information thus losing the information before the retrieving step this results in just the cane id showing up when trying to access information.

Another possible reason could be the periodic updating of the location resulting in removal of the other data but even the location is not retrieved in access step.

Tasks Assigned for Next reporting period:

The emulated app needs to work proficiently before connecting to the STM32 and upon connection checking that the accurate information is being displayed. And testing the notifications feature is functional to reduce the battery consumption of the device.

Please include supporting documentation

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Individual Summary (cont.)

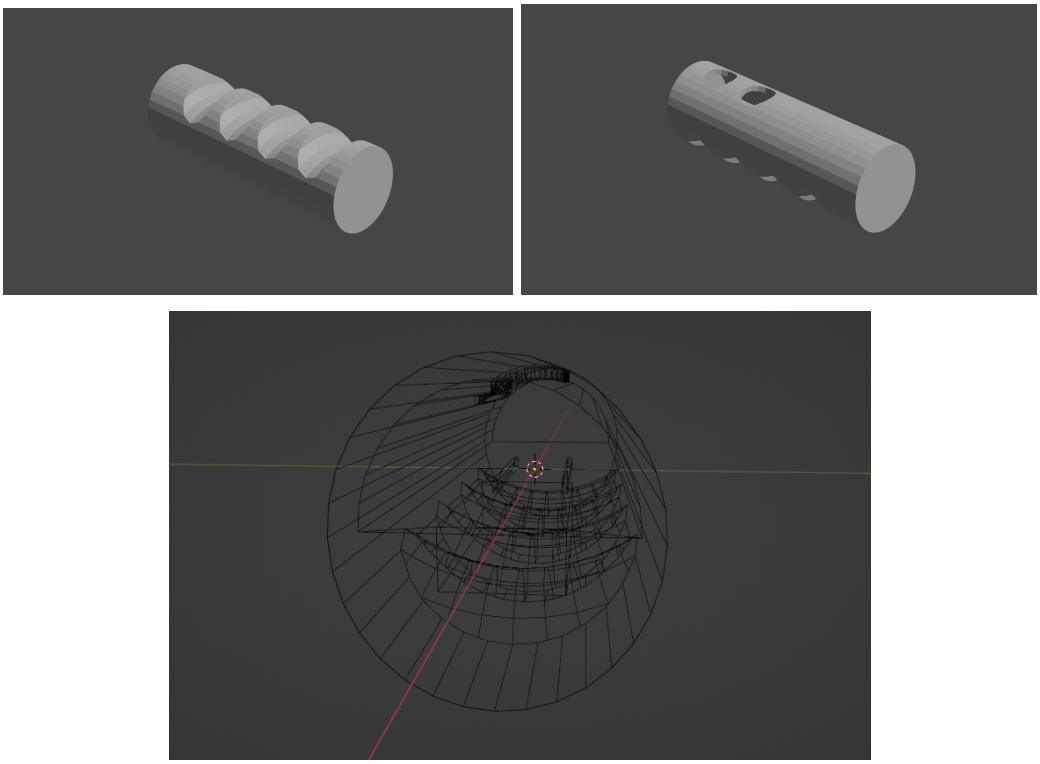
Name: Eric Zizumbo

Tasks Assigned for this reporting period:

1. Xavier asked that I make a new handle with the parts inside of it. The new handle will replace one of the pipes that make up the foldable cane, so I should make my design from scratch and not worry about the wiring nor any size constraints.

Accomplishments this reporting period:

1. It turns out adding handle grooves was a small task, so I implemented them for this new handle. The reason why it's thinner is because now the handle will replace the last pipe of the cane. It still has a few features from the last model, namely the holes where the sonar should be.



Interior view of the model

Issues:

1. We came into an agreement on making the foldable cane not foldable for the project to work. I was wondering how we are going to present our idea to the world. Is our project a conversion kit? Does our audience need to buy a very specific cane to use our device? Etc.
2. I'm still hesitant to print any large molds, so I made this week's model as small as possible.

Please include supporting documentation

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Tasks Assigned for Next reporting period:

1. As next week is our first milestone, I should "bring everything together" and design the rest of the parts. This includes:
    a. The wiring that goes through the foldable cane.
    b. A new design for the rubber end of the cane (my teammates suggested reusing the ball-with-a-fin design from a month back).
    c. A new iteration of the handle (it has not been decided, but I know there will be one).

Please include supporting documentation