Logbook

Week 13:

First week of Intelligent mobile systems. This week was the initial week and the groups got created on Monday. We decided to have our first large meeting on Wednesday of the week to communicate about how we want to work and in what teams. Some of the group members had decided it the day before but everyone couldn’t attend. On Thursday we had our first session together. We have decided in the group to try to attend the lab sessions that we have each Thursday, and this first session was to try to understand what part of the project did what. We created a workflow of a potential scenario and appointed what part that was responsible. At this meeting was also an initiation of the tickets that are created in trello. Here all the group members can insert tickets, and this is a good way for everyone to keep up to date with what tasks are being done at the moment and to see what is left to do. Since it was the first week, we said that we will start the real work on Monday.

Week 14:

Monday: Today was individual work for the different groups. My objective for today was to try to learn about Flutter that is the environment that we are going to work in.

Tuesday: On Tuesday we have scheduled a meeting after the lecture that we have agreed on to always have. In this meeting we went over what has been done so far in the week. We also went over different questions that we have for Husqvarna for the weekly supervision that we have on Thursdays. This was also a day of trying to learn Flutter.

Wednesday: Today me and Joakim had a stand-up meeting where we went over how we want to work as a group and different rules on how to work. Some of the things that was decided was that we are going to have stand-ups every second weekday starting Monday. Another thing we went through was the mockup that Joakim had created and if it looked according to the plans. Some things where question marks that we forwarded to Husqvarna on Thursday.

Thursday: Today was the first supervision with Husqvarna. All the different team leaders got to ask questions about the project and specifications about the tasks. After the meeting I went to the scheduled lab sessions where I brought the team up to date on the answers. We also had a small stand-up where we talked about the current progress made. The rest of the day is free work.

Friday: On this day I sat with another course and therefore much work wasn’t made.

Week 15:

On week 15 my job was to start research and start working on the Bluetooth connection. We are using a package in flutter called flutter\_blue that is the official Bluetooth package for flutter usage. I watched the Bluetooth lecture to better understand how it works. We found some great examples online on how to implement the Bluetooth. There might still be some parts that we need to work on but most of the stuff we need should be available to find documentation on hopefully. I’ve started implementing Bluetooth classes for different usages and have come some way. Most of it is still communication between different classes so no UI has been created. My goal for next week is to have either fully implemented Bluetooth or having the basic connection to the rover done. It depends on how easy it is to connect to the rover.

Week 16

This week was a week where a lot of time was put into creating the structure for the Bluetooth. After looking at the flutter blue repository I found many different files that we needed in our model part of the app. Since we are working in a model-view-view Model we need to create the dependencies in separate folders and then initialize them in the View Model and control it before using them in the view. We are still some ways from being done with the mower but hopefully, it goes fast. Joakim finished the first part of the Joystick and will now begin looking at the view for the Bluetooth list.

Week 17

The goal for this week has been to hopefully finish the Bluetooth part. I and Joakim have been working together with creating the view model and view to make sure that everything works. Joakim finished all the separate parts for the view and my task is now to make it work with the view model. At the end of the week, we were ready to try the Bluetooth but the Bluetooth sadly didn’t work. It seems that we have a problem with the permissions for the project. Since we use Bluetooth, we need to ask for permission before it is used but there seems to be something wrong. Will continue to work on it next week. Since Joakim is done with the view we decided that he will start on the HTTP requests from the REST API.

Week 18

For this week’s mission, it was to make sure that the Bluetooth and the rest API requests were working. We in the group had set a target that we should be done with all the different connections this week to make sure that we are at pace with the project. The problem that we still had with Bluetooth was that the permissions were wrong. We sat with this problem for a while and looked into other libraries and examples of code to see what we could have done wrong. The only output we received was that there were missing permissions in the manifest. This means that the android project isn’t set up right. At the end of the week we realized that where we are looking for permissions, we had forgotten to ask for all the required permissions. The earlier belief was that we only needed to ask for Bluetooth when it in fact was needed to check three different permissions. With this done we could finally find different devices on our app. The new problem was that we couldn’t find the mower Bluetooth device. After some research and testing with integrating a search filter for the mower, we realized that there might be a problem with that the library that is being used is using BLE instead of regular Bluetooth. I will contact Andreas about receiving a raspberry-pi 4 instead and see if that solves the issue and hopefully, we can be done with Bluetooth next week.

Week 19

This week’s mission is to make Bluetooth work. We are currently working on a Bluetooth Low Energy(BLE) solution and have gotten a raspberry-pi 4 from Andreas Axelsson since the Raspberry-Pi zero doesn’t support it. We have made it so that the app recognizes BLE but the app doesn’t seem to find the app. This is something that we investigated over a couple of days and tried many solutions. At the end of the week we realized that there was a fault in our Raspberry-Pi 4 where some raspberry’s Bluetooth doesn’t work. We traded the raspberry for a new one and this one seemed to work. Since BLE doesn’t find the raspberry we might need to look into other solutions. I assigned Filip to look at web sockets as a worst case scenario. We will need to look further into this in week 20.

Week 20

Monday

Sat with Filip, Yazan. On the first day of this week, we realized that using BLE won’t work. There are too many difficulties for it to be worth it. I found another package in flutter that implements Bluetooth classic. After following an example, we got the Bluetooth to work and we could establish a connection that can communicate with the mower by sending messages. Now we just need to change this to fit our purpose.

Tuesday

Sat with Filip and on Tuesday we worked on restructuring the code so it would fit out purpose. We had a problem with sending the Bluetooth connection to another page since we need to carry that with us. The problem came up since we tried to create a new view and implement features from the original “chat page”. We didn’t succeed with this on Tuesday and needed to continue on Wednesday. In parallel with this me and Filip sat and tried to make it so that the mower would receive the data and check if we wanted to drive autonomously or remote. We made it so that we received the right data but there still was some issues.

Wednesday

Sat with Filip, Yazan, Maryam and Leonora. On this day we realised that it was better to change the original file chat page to fit our purpose since that would be easier. We implemented the view that we wanted, removed unnecessary code and got it to work so that when we moved the joystick it send the right information to the mower and it could switch between the modes. Now the raspberry only needed to figure how to process the data correct.

Thursday

Today most people in the group was here. Thursday was a big day for testing and piecing together everything. The app was now able to speak to the mower but now we needed to fix the routing, the navigation bar and the map. By sending with the code piece “final BluetoothDevice server” we could bring the Bluetooth connection with to the different pages. We made it so that everything worked except for the map. There seemed to be a problem with the backend where we couldn’t fetch the data since it had changed from two REST API calls to one. Yazan made the raspberry work and now the data is processed as it should, and we can steer the mower using the app and switch between the modes. We also wrote on the documentation.

Friday

Sat with Filip and Yazan today mostly. Today we fixed the final issues with the app. We had an issue with the http requests from the backend to the app. The problem was that there had become a sudden change where the two different lists had merged. Matteo who takes care of the server came in the afternoon to fix that issue and after that we could fetch both the boundary collision and object collision events. This was the last part of the app, and it was now done. Later in the day we sat with the documentation to try to finalize as much as possible before Saturday. We also filmed where we had a fully successful journey with the mower and the app to add to the lessons learned document.

Saturday

Today is the last day for the project for group 2. The whole mower team, me and Filip sat today to finish the rest of what was left. We have issued a code stop at 20:00 today so that everything is working when we are planning to hand it in tomorrow. This day will be full of cleaning of code, documentation and ensuring that everything is working when we hand it in. Tomorrow Sunday, I will hand the project in at around 12:00. Fixed the last parts of the app code and thereafter created merge to main branch.