# TurtleBot project Logbook

## Week 0 and 1

* Got robot to move but already encountered issues with ROS topics and connectivity issues with provided wireless robot controller
* Started to setup Gazebo with Turtlebot 4 simulation
  + Problems with AMD cpu not supporting gazebo with graphic accelerators
  + Problems where Gazebo doesn’t publish one specific topic and Rviz can’t visualize the whole map

## Week 2

* Fixed gazebo running problems by installing linux and changing rendering engine to ogre2 in a specific file
* Chose research question by reading different papers and discussing with AI about possible broad topics as to get an idea of what to pursue
* Got Turtlebot 4 to run on Rviz efficiently by running everything on the ssh’ed terminal EXCEPT the actual Rviz. Helped a lot
* Having trouble with understanding how to read the research papers and what to pay attention to.
  + I have a RQ in mind and how to do it but can’t understand what reasonings to find in the research papers

## Week 3

* Figured out the research question by reading more related papers, using AI for ideas and also playing around with the robot and noticing that it’s battery life is not the best
* Current research question is “How do different Nav2 path planning algorithms affect energy consumption of Turtlebot4 in dynamic environments”
* Was confusing to understand which papers to read but dividing the vague steps on how to test the thesis lead to finding more specific papers to read.

## Weeks 4 and 5

* Got the floor mapped finally
* Problem was running the rviz on the turtlebot which shouldn’t be done
* But could map only part of the floor because of the wifi signal dropping of

## Week 6

* Wore out the study design. Really helped think about the details and understand further how im going to go about doing the actual testing, what would be good, bad and what to change.

## Week 7

* Wrote the initial thesis outline. Since I had never wrote anything in this research format was a bit hard to understand what should go where. Kim helped understand the details on this.
* Started making the full script for testing. Ran into some problems for getting all the dependent metrics to save properly.

## Week 8

* Making packages for tracking all the needed metrics and saving them to neat .csv files for easy analysis later
* Making the automated testing system where one script launches the gazebo sim environment with the robot and the packages for tracking the metrics as well.

## Week 9

* Refined the research question to focus on purely the controller algorithms. Idea is to reduce the amount of different parameters that change inbetween each run. This way the produced results reveal better insight into the battery consumption of each controller algorithm.

## Week 10-12

* Writing Thesis and finalising results

## Week 13

* Finishing README