1 Introduction

This report presents the key activities, team efforts, and progress of the **RoboBadgers** team for the Bosch Future Mobility Challenge competition.

Key Activities

Planning: Defined roles and responsibilities clearly, chose and approximate project timeline and goals.

Vehicle System Initialization: Configured both the Raspberry Pi 5 and the Nucleo Board and first started the Dashboard and computer simulation Servers.

Code Research and Debugging: We studied the code of all the parts like Brain, Computer, Embedded. This helped us gain a perspective on the code structure and logic.

Changes

Decided to purchase the Raspberry PI AI Hat, to drastically enhance system image processing capabilities and free the RPI5 processor for other tasks.

2 Planned activities

1.Planning

- Decided each individual team's member strengths related to the project's needs.
- Assigned roles to everyone
- Decide on an initial timeline, that would align with the organizers requirements.

2.Documentation reading

- Cloned the GitHub repository and studied the code for all components.
- Read the documentation from the contest website.

3. Study the hardware of the car

4. Set up the software on the RPI5 and Nucleo

- Cloned the official git repo and patched faulty code.

5. Start the car & ensure that the already existing functionalities work

● Define the roles of each member

3 Status of planned activities

-> Study the documentation - **100% completed**
-> Study the hardware of the car - **100% completed**
-> We noticed that the BNO sensor is placed close to the DC motor. This will cause noise in the readings. So we will investigate a solution.
-> We attached a **TimeOfFlight** sensor that we'll use for obstacle detection.
-> Study the Brain code & set it up: **90% completed**
-> We tested the sensors and made sure we can receive data from them.
-> Start the car: **completed**
-> Define the roles of each member: **100% completed**
We established the main role of each member. However, the roles are flexible, as our skillsets are mostly similar, everyone having their on unique suplimentary skill.

4 General status of the project

At the moment, the car can be controlled from a computer, where we can also see a live stream from the camera.

We still have some small problems to fix with the Brain code, but this issue is of upmost priority.

5 Upcoming activities

We are going to investigate and come up with a solution regarding the problem with the servo motor (which causes the Raspberry Pi to shut down when used). We expect to finish lane detection & traffic sign recognition modules by the next status.

After sorting everything out, we will start testing on the physical track that is in our faculty.