1 Introduction

Welcome to the exciting phase two of our autonomous driving car project, where the rubber has met the road, quite literally!
This report delves into the recent developments following the much-anticipated arrival of the car, the implementation of essential algorithms, and the integration of new components that propel us forward.
The contents encompass the assembly process, the ongoing implementation of sign detection algorithms, the establishment of communication with the Raspberry Pi, the initiation of basic control functions, and the integration of a new hardware component, the TOF400F proximity sensor.

2 Planned activities

Activities were divided into 4 feature lists plus Catch up activity:

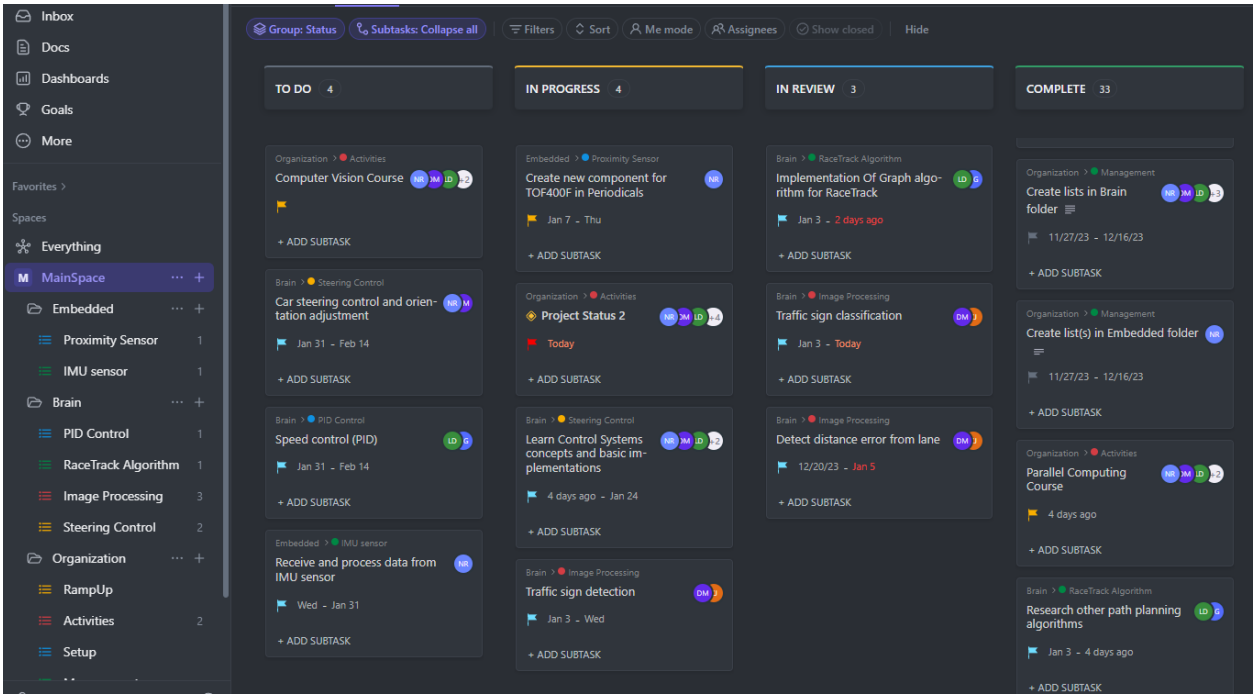
1. Catch up – finish all “in progress’’ and “in review” pending tasks from last sprint (we are finally set up)
2. Computer Vision - Detect distance error from lane, Traffic sign classification, Traffic sign detection
3. Path Algorithm - Implementation Of additional Graph algorithms for RaceTrack
4. Embedded Platform - Add new component to Nucleo (LED1 blinker as test and try), Create new component for TOF400F in Periodicals
5. Car control – Receive and (dis)assemble the car , Remote control through Raspberry Pi ssh connection and Putty terminal

3 Status of planned activities

Additional 12 new tasks were created and 13 tasks finished as of Report 1, summing in total:

1.Done: 33
2.In progress: 4
3.In review: 3
4.ToDo: 4

Screenshot attached:



In general, most of planned activities are completed successfully. Some of planned activities are still in progress (or in review) due to deadline set in project plan after project report date (will be completed in next week). 2 tasks are overdue due to additional review and tests needed.

4 General status of the project

After sprint review we defined 5 keystones we need to address here:

1. **Continued Task Management:** The team persists in utilizing ClickUp for comprehensive task management. This platform remains integral to our project, offering a structured approach to organization and progress tracking.
2. **Sign Detection Algorithm Implementation**: The focus has shifted to the implementation phase of sign detection algorithms. This critical stage emphasizes precision and reliability as we work to interpret visual cues crucial to the autonomous functionality of the vehicle.
3. **Infrastructure Setup:** A meticulous setup has been established, ensuring seamless communication with the Raspberry Pi. This foundational step is imperative for the successful integration of software and hardware components.
4. **Basic Control Functionality:** Significant strides have been made in unlocking the basic controls of the vehicle. The car is now navigable through Raspberry Pi commands and the PuTTY terminal, allowing for nuanced control and system refinement.
5. **Addition of Proximity Sensor TOF400F:** A noteworthy development involves the incorporation of the TOF400F proximity sensor as a new component. This addition enhances our hardware capabilities, introducing a layer of precision and adaptability integral to the dynamic requirements of autonomous navigation.

As the project advances into its third phase, the team remains committed to the methodical execution of tasks. From the assembly of the vehicle to algorithmic implementation and hardware integration, each step represents a calculated progression towards the realization of our autonomous driving objectives. This report serves as a formal documentation of these advancements, providing an overview of our ongoing efforts in this innovative pursuit.

5 Upcoming activities

For the next sprint (due 11.02.2024):

1. Computer Vision: Add new camera as additional input
2. Control Algorithm : Learn Control Systems concepts and basic implementations, Implement Speed control (PID) regulation, Car steering control and orientation adjustment
3. Embedded Platform: Receive and process data from IMU sensor