

Name		Status		Logistics				Software Requirements	Description
ID	Task	Subtask	Status	Blocking Point	Priority	Specific Discipline	Update Date	Development Package	Description
20	Chassis Design - Development		3 In Progress		P2	Chassis	2024-11-09	NA	Design a chassis that makes the installing and removing of all boards (jetson, STM32) easy and efficient. Must take into account cable management, rigidity, stability.
20.1	Chassis Design - Development	Measurements and survey	Complete		P2	Chassis	2024-10-20	NA	Survey of car dimensions, installation and anchor points, dimensions of boards and of chasis.
20.2	Chassis Design - Development	Design hypothesis	Complete		P2	Chassis	2024-10-26	NA	Rough ideas and brainstorming, different approaches and possible mechanisms that could work
20.3	Chassis Design - Development	Modelling	Complete		P2	Chassis	2024-10-26	NA	Modelling and design of actual parts
20.4	Chassis Design - Development	Printing and testing	In Progress		P2	Chassis	2024-11-02	NA	Printing and testing of parts to see if functional design
21	Communication with Car		4 Complete		P2	Running	2024-02-01		Implement a way to communicate with the car that minimizes delays and gives us real-time feedback
21.1	Communication with Car	Identify source of current problems	Complete		P2	Running	2024-12-07	Multiple	Identify the reasons for which communication is very slow right now
21.2	Communication with Car	Research alternatives & report	Complete		P2	Running	2025-01-05	Multiple	Research alternative methods of communication with the jetson, that would enable real-time streaming of data
21.3	Communication with Car	Implement test scripts	Complete		P2	Running	2025-01-19	Multiple	Implement test scripts and measure the delays of communication between devices
21.4	Communication with Car	Adapt to the dashboard	Complete		P2	Running	2025-02-01	Multiple	Adapt the dashboard so that the source of the data can be from the stream of information and not through ROS
21.5	Communication with Car	Adapt to services	In Progress		P2	Running	2025-01-26	Multiple	Adapt the services such that they are called through TCP and not through ROS
16	Documentation - Hardware		2 In Progress		P2	Documentation	2025-01-01	NA	Document this year's hardware
16.1	Documentation - Hardware	Interaction Diagram	In Progress		P2	Documentation	2024-12-16	NA	Create architecture for hardware. Detail with all components and connections.
16.2	Documentation - Hardware	Organize previous year documents	Complete		P3	Documentation	2024-11-16	NA	Organize last year's documents for further reference and help
17	Documentation - Software		2 In Progress		P2	Documentation	2025-01-01	Multiple	Document this year's software
17.1	Documentation - Software	Re-Organize GitHub RePo	Complete		P2	Documentation	2024-11-30	Multiple	Organize the GitHub Repo such as to make it easier to navigate and develop. Needs to be done before sharing with BPMC
17.2	Documentation - Software	Write ReadME for all	In Progress		P4	Documentation	2025-01-01	Multiple	Write ReadMe for all repositories, to make it understandable and portable. All important information should be contained such that a newcomer knows how to install and use
11	IMU Data - Bosch Sensor		5 Complete		P1	Electronics	2024-11-22	Sensing	Obtain accurate data from the IMU
11.1	IMU Data - Bosch Sensor	Understand Sensor	Complete		P1	Electronics	2024-10-26	Sensing	Read up on the documentation and understand how the sensor works. Be able to explain to anyone on the team
11.2	IMU Data - Bosch Sensor	Read Values with STM32	Complete		P1	Electronics	2024-11-02	Sensing	Use STM32 to read values from the sensor and print them. Must be able to parse and get all data output by sensor
11.3	IMU Data - Bosch Sensor	Test Quality of Values	Complete		P1	Electronics	2024-11-09	Sensing	Test the quality of the data output and its limits. Prepare testing document and data analysis
11.4	IMU Data - Bosch Sensor	UART with Jetson	Complete		P1	Electronics	2024-11-23	Sensing	Establish serial communication with the Jetson. Test for different use cases and make sure to be able read clearly
11.5	IMU Data - Bosch Sensor	Script/Flash	Complete		P1	Electronics	2024-11-30	Sensing	Write script that automatically reads IMU data and publishes it over UART. Must be robust with reset.
15	IMU Data - RealSense		4 In Progress		P3	Devices	2024-12-16	Sensing	Obtain accurate data from the RealSense IMU
15.1	IMU Data - RealSense	Understand IMU function	Complete		P3	Devices	2024-11-09	Sensing	Understand the way the RealSense IMU works. Specificities, ways it publishes data and how it communicates
15.2	IMU Data - RealSense	Identify issues with IMU data	Complete		P3	Devices	2024-11-23	Sensing	Identify the issues with obtaining the data. Survey data from previous year, test situations and launching
15.3	IMU Data - RealSense	Find method to acquire IMU data	Complete		P3	Devices	2024-11-30	Sensing	Find the method that enables us to get IMU data from the RealSense reliably. New script? Settings within current script? Required manipulations? Document procedure.
15.4	IMU Data - RealSense	Test Quality of Values	Complete	Filtering to get the YAW yields unstable values	P1	Devices	2024-11-30	Sensing	Test the quality of the data output and its limits. Prepare testing document and data analysis
18	Integration Testing		3 In Progress		P1	Testing	2025-01-01	Multiple	Ongoing integration testing for all algorithms
18.1	Integration Testing	Previous Year Running	Complete		P1	Testing	2024-11-16	Multiple	Get last year's algorithms to work
18.2	Integration Testing	New Car Kit/Running	Complete		P1	Testing	2024-12-07	Multiple	Get last year's algorithms to work on the new Bosch provided Harware
18.3	Integration Testing	General Testing/Bug Fixing	Complete		P1	Testing	2024-11-13	Multiple	General testing to find issues with code, hardware. Test for accuracy, reliability,etc.
22	Local Planning Waypoints		2 Waiting	Low Priority	P4	Path Planning	TBD	Planning	
22.1	Local Planning Waypoints	Review current lane detection	Waiting	Dependent on prior task	P4	Path Planning	TBD	Planning	
22.2	Local Planning Waypoints	Make lane detection work	Waiting	Dependent on prior task	P4	Path Planning	TBD	Planning	
12	Motor Control - Input Acceleration		7 In Progress		P2	Electronics	2025-01-11	Sensing	Develop a new and better way to control the output to the motor
12.1	Motor Control - Input Acceleration	Understand current control	Complete		P2	Electronics	2024-12-26	Sensing	Find out whatever is going on with the current script. Why speed? How is it converted? What does the motor get? Why did they do it like that? Research how the motor works and its specs.
12.2	Motor Control - Input Acceleration	Work out our needs	Complete		P2	Electronics	2025-01-04	Sensing	Discuss with software and hardware to see what is best for us. What is used in industry? What gives us the best response? What is feasible and not based on previous task.
12.3	Motor Control - Input Acceleration	Develop Script	Complete		P2	Electronics	2025-01-11	Sensing	Write out a script that implements what has been decided. Provide adequate documentation
12.4	Motor Control - Input Acceleration	Test Script	Not required		PN	Electronics	2025-01-11	Sensing	Test out the script with the motor. See the response and provide testing documentation. Iterative approach to work out algorithm
12.5	Motor Control - Input Acceleration	Combine with IMU script & Flash	Not required		PN	Electronics	2025-01-18	Sensing	Combine the script with the IMU script to be able to run both at once.
12.6	Motor Control - Input Acceleration	Test combined script	Not required		PN	Electronics	2025-01-11	Sensing	Test out combined script. Make sure no errors, lost data, stalling, delays, corruption
12.7	Motor Control - Input Acceleration	UART with Jetson	Not required		PN	Electronics	2025-01-11	Sensing	Test out combined script. Make sure no errors in communication, crashing or lost signals
25.1	Power Distribution Board Replacement	Identify current issues	In Progress		P2	Running	2025-01-05	NA	Attempt to isolate which component is causing the absence of voltage at the terminals. Use both the gerber files on altium to look at the circuit diagram and probe points on the actual board
25.2	Power Distribution Board Replacement	Research alternatives, potential solutions & report	In Progress		P2	Running	2025-01-12	NA	Survey the different options available to us and evaluate their feasibility. Rank them in terms of their worth to the project considering cost, ease of implementation, and time taken to implement. Present the report to the team
25.3	Power Distribution Board Replacement	Design, submissions, purchase or ordering of solutions.	Waiting	Dependent on prior task	P2	Running	2025-01-19	NA	Send out any submissions and contact suppliers if needed, order components
25.4	Power Distribution Board Replacement	Installation of new powerboard	Waiting	Dependent on prior task	P2	Running	2025-01-26	NA	Test out the chosen solution and subsequently install it on the car once everything has been verified to be working
14	RealSense - Launch		3 Complete		P2	Devices	2024-11-01	Sensing	Fix realsense launch issues, find method to launch reliably and consistently
14.2	RealSense - Launch	Understand provided code	Complete		P2	Devices	2024-10-27	Sensing	How does the current script launch the realsense and send the data? ROS? Serial communication? Explanation for everyone
14.3	RealSense - Launch	Survey of problems	Complete		P2	Devices	2024-11-02	Sensing	Discuss issues that aros last year. Detail them and find out what causes them. Documentation and explanation for issues to explain to team mates.

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14.4	RealSense - Launch	Find method to launch realsense	Complete		P2	Devices	2024-11-09	Sensing	Find the method that enables the realsense launch with reliability. New script? Settings within current script? Required manipulations? Document procedure.
24	SLAM Realsense	Integrate SLAM for knowing the car's position	In Progress		P2	Localization	2025-01-11	Sensing	Implement simultaneous localization and mapping using the realsense camera
24.1	SLAM Realsense	Algorithm Research	In Progress		P2	Localization	2024-12-26	Sensing	Look into the slam algorithm and if it is feasible for our car and for our current use case
24.2	SLAM Realsense	Testing different librairies	In Progress		P2	Localization	2025-01-04	Sensing	Research different librairies that are currently available for the intel realsense camera that make use of both the IMU, the Depth camera and the wide angle camera
24.3	SLAM Realsense	Simulator Testing	In Progress		P2	Localization	2025-01-04	Sensing	Do some testing on the simulator to see if the librairies can actually be used to localize the car and if the results are promising
24.4	SLAM Realsense	Jetson Runtime Test	Waiting	Segmentation fault when launching ROS-Realsense	P2	Localization	2025-01-11	Sensing	Do some runtime tests on the jetson to see if it is able to work throught the algorithm at a steady pace and is compatible with the object recognition model
24.5	SLAM Realsense	Integration Testing	Waiting	Dependent on prior task	P2	Localization	2025-01-18	Sensing	Do an integration test to see if it is possible to use this algorithm on the real track
23	Speed Calibration		3 In Progress		P2	Running	2024-12-08	NA	Make sure that the commands we are sending to the car reflect the actual behaviour of the car
23.1	Speed Calibration	Test the current speed accuracy	Complete		P1	Running	2024-11-29	NA	Test the calibration that Bosch made on the car. Check for error values and accuracy
23.2	Speed Calibration	Understand the code for controlling speed	Complete		P1	Running	2024-12-21	NA	Understand the code so that adjustments are based on the internal workings of the embedded system platform
23.2	Speed Calibration	Tune the values for speed	Complete		P1	Running	2024-12-31	NA	Tune the values based on the test results and the understood code from embedded platform
23.3	Speed Calibration	Characterize the motor and create speed curve	Complete		P1	Running	2024-12-31	NA	Measure multiple different speeds from given range of input PWM values, fit curve to the point cloud to get relationship between the speed and input PWM
23.4	Speed Calibration	Write function to compute speed from curve	Complete		P1	Running	2024-12-31	Embedded System	Modify the code on the STM32 to be able to compute the speed from the equations found in the preceding task
19	Steering Calibration		2 Complete		P2	Testing	2024-12-16	Sensing	Calibrate the steering for accuracy
19.1	Steering Calibration	Test the actual steering accuracy	Complete		P0	Testing	2024-11-23	Sensing	Test the current quality of the steering
19.2	Steering Calibration	Calibrate the steering	Complete		P0	Testing	2024-11-23	Sensing	Calibrate and ajust the sensitivity of the steering
19.3	Steering Calibration	Characterize the motor and create speed curve	Complete		P0	Testing	2024-12-31	Sensing	Measure multiple different turning radii from given range of input PWM values, fit curve to the point cloud to get relationship between the turning radius and input PWM
19.4	Steering Calibration	Write function to compute speed from curve	Complete		P0	Testing	2024-12-31	Sensing	Modify the code on the STM32 to be able to compute the PWM given an input Steering angle from the equations found in the preceding task
13	Technical Challenge Path		4 In Progress		P4	Path Planning	2025-02-22	Planning	Optimize path for the technical challenge
13.1	Technical Challenge Path	Survey of available approaches	Complete		P4	Path Planning	2024-11-09	Planning	What are the available options? Pros and Cons of each? Specificities to our competition? Be able to present and explain them to the team to discuss. Select 2 or 3 approaches to attempt
13.2	Technical Challenge Path	Develop algorithm following approach	In Progress		P4	Path Planning	2024-12-07	Planning	Develop algorithm in python, visualisation required. Summary of results, problems and what they imply. Take into account possible placement, trajectory, re-adjustment, etc.
13.3	Technical Challenge Path	Test algorithm (Graph)	Waiting	Dependent on prior task	P4	Path Planning	2025-01-11	Planning	Iterative testing, in combination with previous task/algorithm development
13.4	Technical Challenge Path	Integrate algorithm	Waiting	Dependent on prior task	P4	Path Planning	2025-02-08	Planning	Integrate the algorithm with the other packages. Fix any merging issues and situations in which to apply it.
10	Track Design		4 Complete		P0	Track	2024-11-09	NA	Make initial 5m X 5m grid for the track
10.1	Track Design	Material Research	Complete		P0	Track	2024-10-20	NA	Find the appropriate material for the track, for the lines. Look up prices, compare feasibility and quality of different options
10.2	Track Design	Material Purchase	Complete		P0	Track	2024-10-26	NA	Visit stores for quotes, purchase material and tools required, bring to McGill
10.3	Track Design	Esquisse	Complete		P0	Track	2024-11-02	NA	Draw general outline for the track, take measurements and place markings precisely before permanent
10.4	Track Design	Réalisation	Complete		P0	Track	2024-11-17	NA	Apply permanent markings to the track
26	Track Design - Qualification	Add required parts for qualification	In Progress		P2	Track	2025-02-09	NA	Add the required parts of the track ahead of the qualification run
26.1	Track Design - Qualification	Design - Calculate required track material and separation	In Progress		P2	Track	2025-01-26	NA	Separate the material, give estimate of quantity required for purchase
26.2	Track Design - Qualification	Esquisse	Waiting	Dependent on prior task	P2	Track	2025-02-02	NA	Draw general outline for the track, take measurements and place markings precisely before permanent
26.3	Track Design - Qualification	Réalisation	Waiting	Dependent on prior task	P2	Track	2025-02-09	NA	Apply permanent markings to the track
27	Model Based Steering		4 In Progress		P1	Path Planning	2025-02-09	Embedded System	Implement computation of the steering angle based on the desired yaw. This desired yaw is computed by the use of the internal kinematic bicycle model and outputs from the MPC controller.
27.1	Model Based Steering	Understand compuation of MPC	Complete		P1	Path Planning	2025-01-12	Embedded System	Understand how the MPC controller supplies information that is used by the kinematic bicycle model, how the yaw is computed and what are the outputs of the RK4 computation
27.2	Model Based Steering	Implement steering to compute angle from expected yaw	In Progress		P1	Path Planning	2025-01-26	Embedded System	Implement a functionality that enables the desired yaw to be sent over serial and used as an input to a function on the STM32. This function uses a PID to match the current yaw to desired yaw
27.3	Model Based Steering	Extensive testing to tune the PID and evaluate quality	Waiting	Dependent on prior task	P1	Path Planning	2025-02-02	Embedded System	Test out and tune the PID to get optimal following of the desired yaw without instability.
27.4	Model Based Steering	Document progress and functionality	Waiting	Dependent on prior task	P1	Path Planning	2025-02-16	Embedded System	Document the fonctionnality of the algorithm and evaluate the quality of the performance.