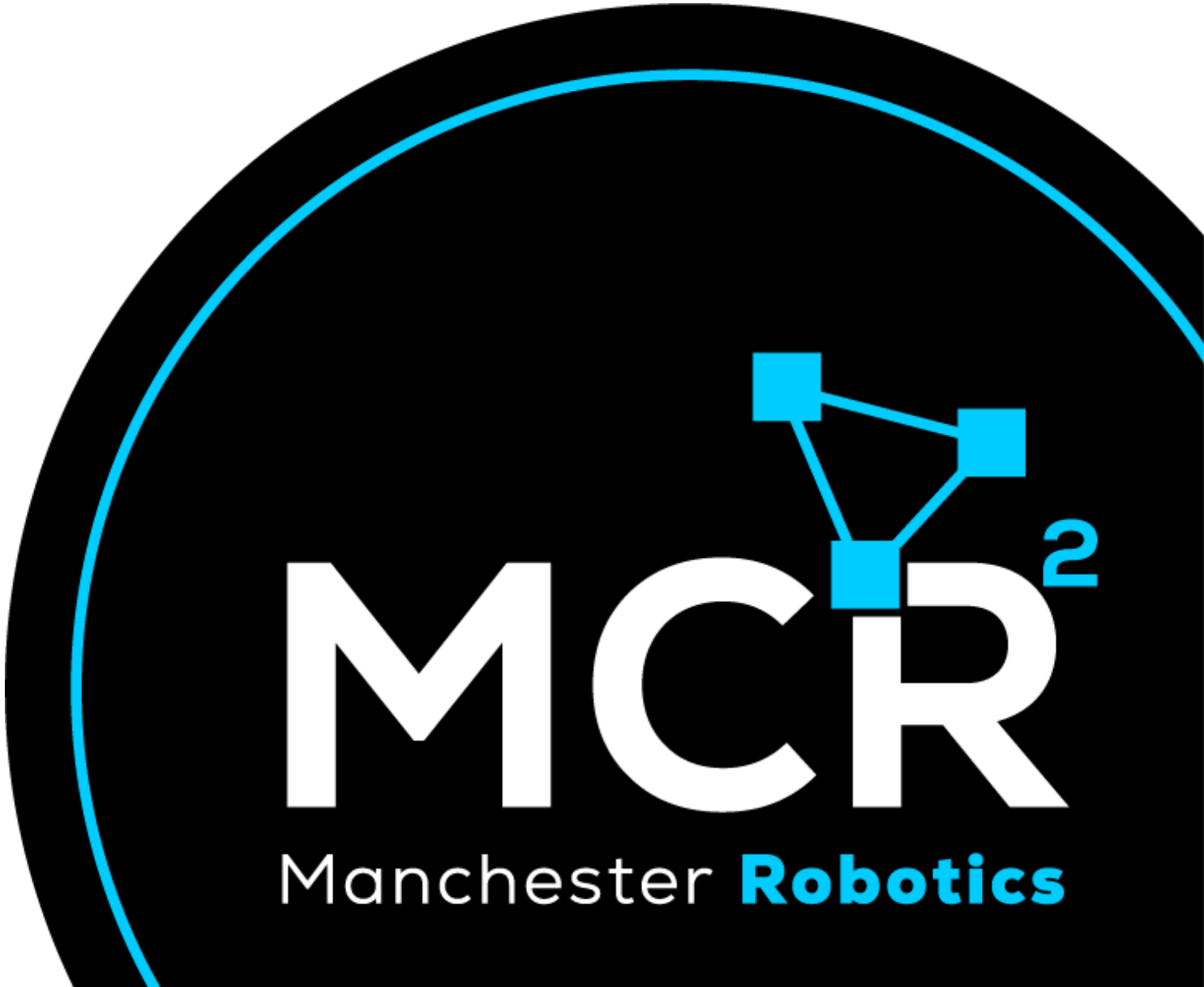
{Learn, Create, Innovate};

The Puzzlebot

Introduction



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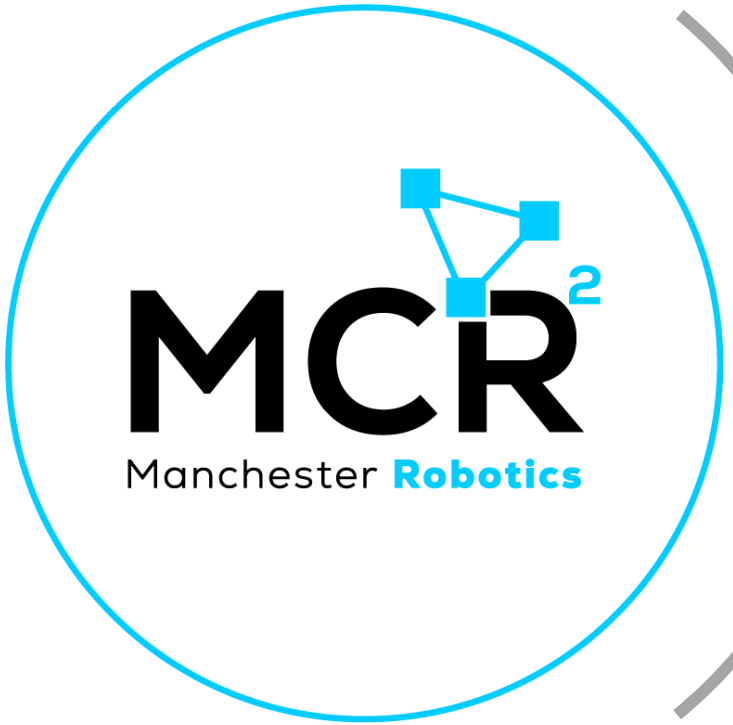

Puzzlebot

What is the Puzzlebot?

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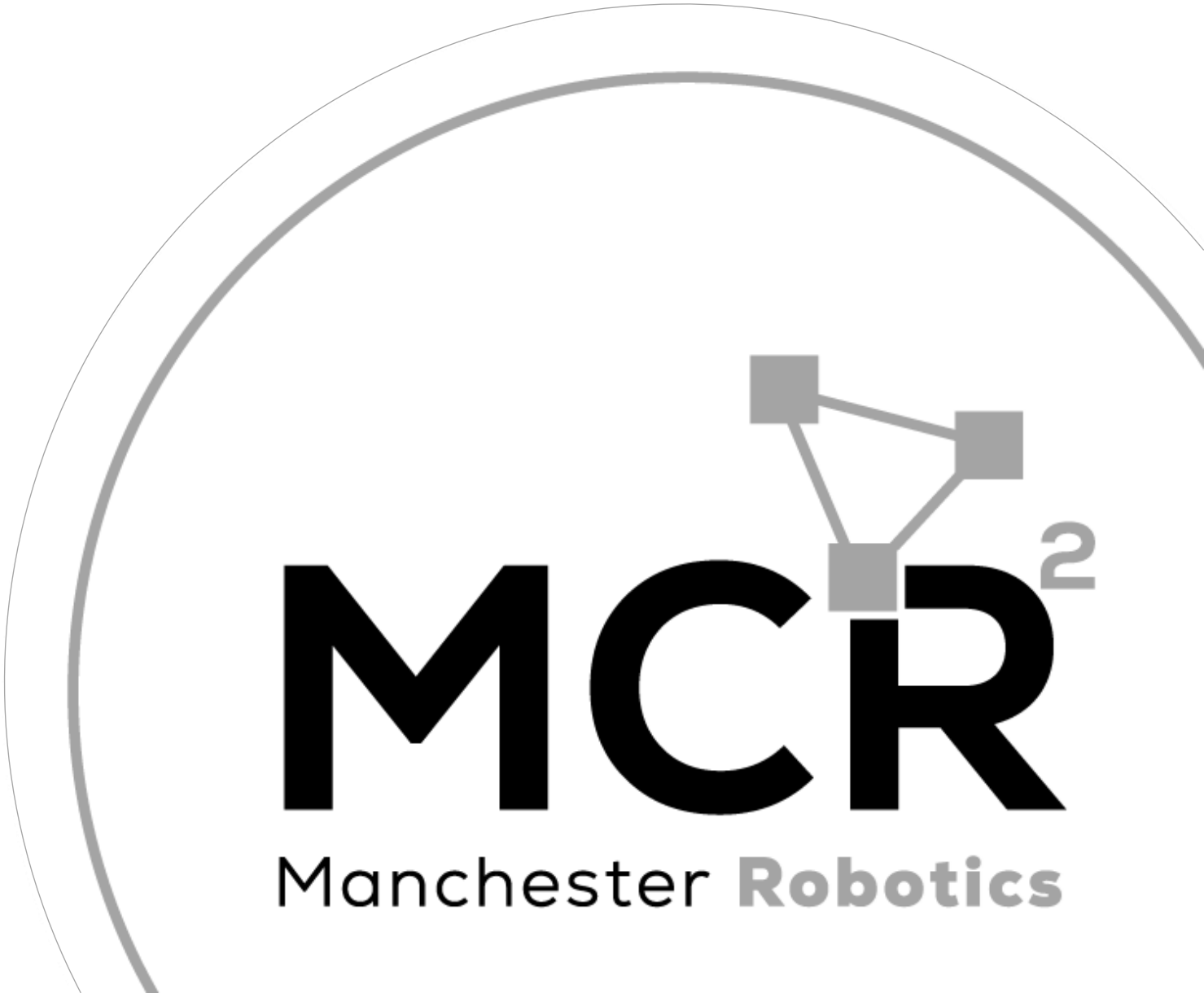


Puzzlebot

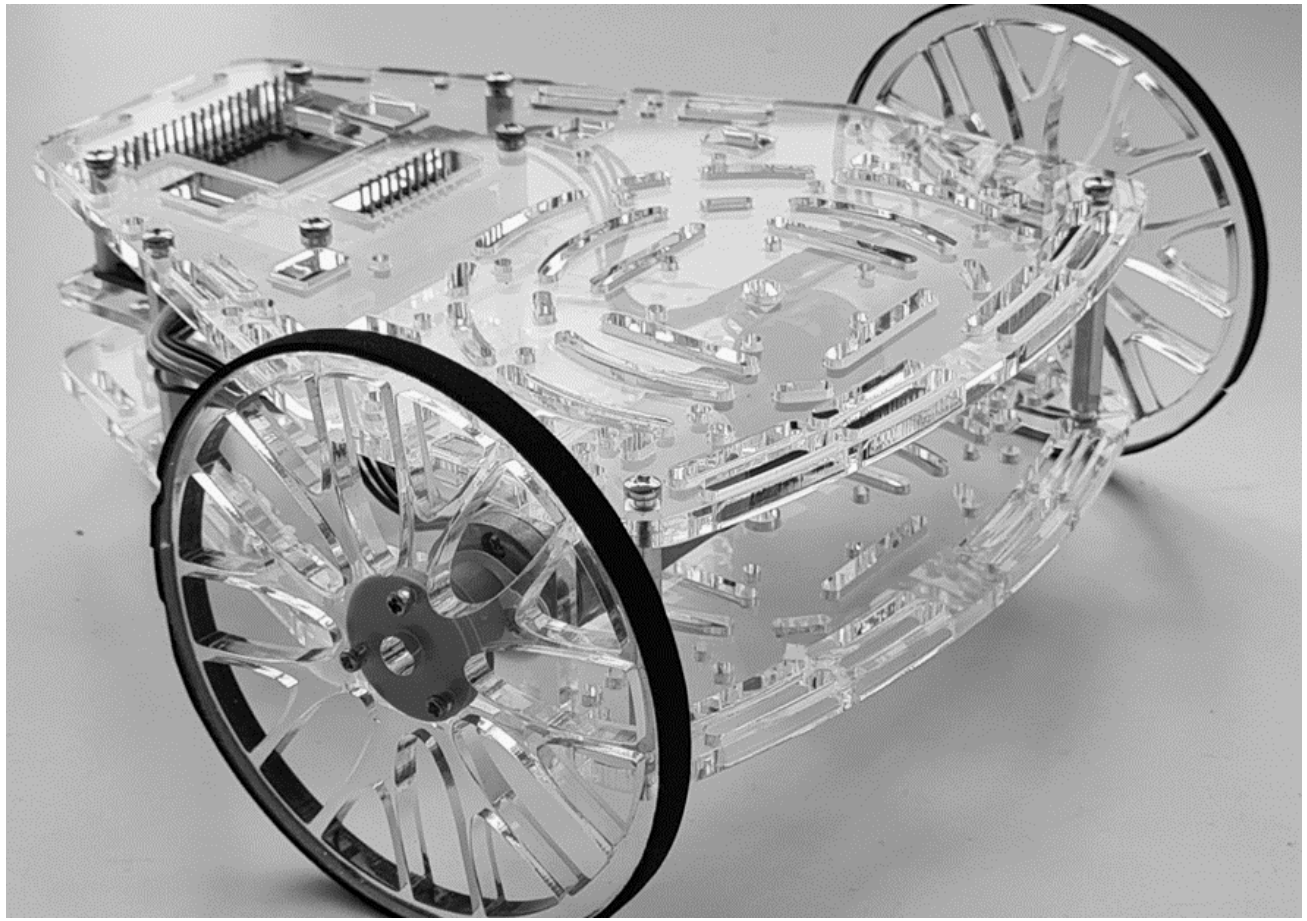
- A flexible, low-cost platform that can be developed by the user and become “smarter”.
- The Puzzlebot was born as an answer to the concept of robotic democratisation.
- The governing philosophy is that customers are motivated to learn robotics by the appeal of advanced features, which offers far more value than over-simplified proxies with high cost, and limited utility.

Puzzlebot

> *“For us, robotic democratisation is not a concept… it’s our way of thinking, working… being.”*
>
> *Professor Constantinos Soutis, Director*

Puzzlebot

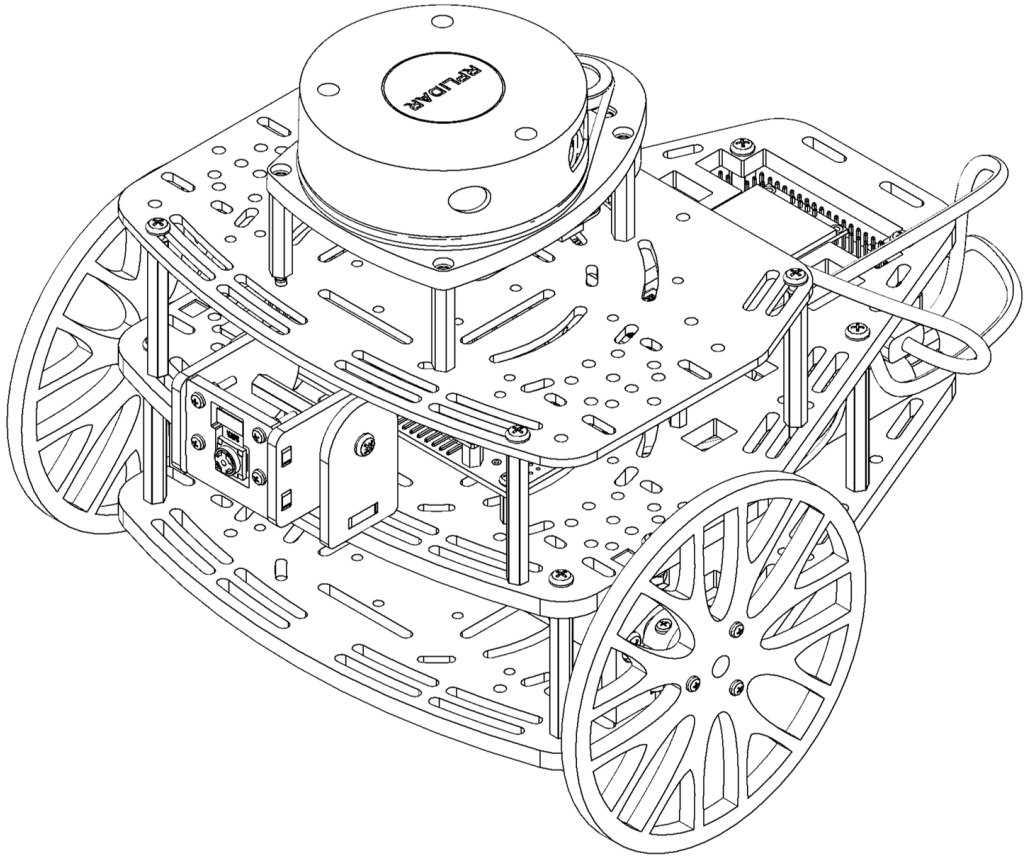
- Puzzlebot is a universal tool for robotics, to help others learn, create, and innovate their own robotic projects.
- The Puzzlebot is a cross-platform, open-source, plug-and-play mobile robot.
- Capable of accommodating 3rd party off-the-shelf components, keeping unit costs low and education available to everyone, thereby democratising access.



Puzzlebot

- Programed in different languages, catering to learner's preferred starting languages.

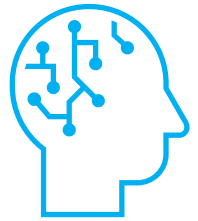
- Provides continuity from entry-level access to research-level functionality ensuring learners to focus on progressing skills rather than having to constantly switch between robotics platforms.

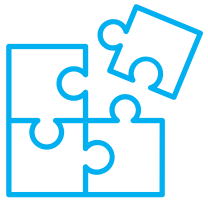


What makes us different?

Advanced Capability

The circuit board is designed around powerful microprocessors and microcontrollers.



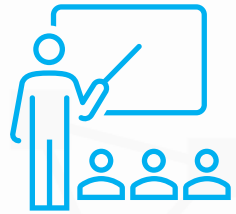


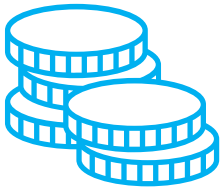
Versatile Feature-set

Our circuit board and software are designed to be versatile to accommodate add-on components.

Basic to Advanced Courses

Basic to advanced robotics courses developed alongside our partnership with NVIDIA





Accessible Price Point

We design with the intent of manufacturing at high volume to keep unit costs low.

Puzzlebot

Versions

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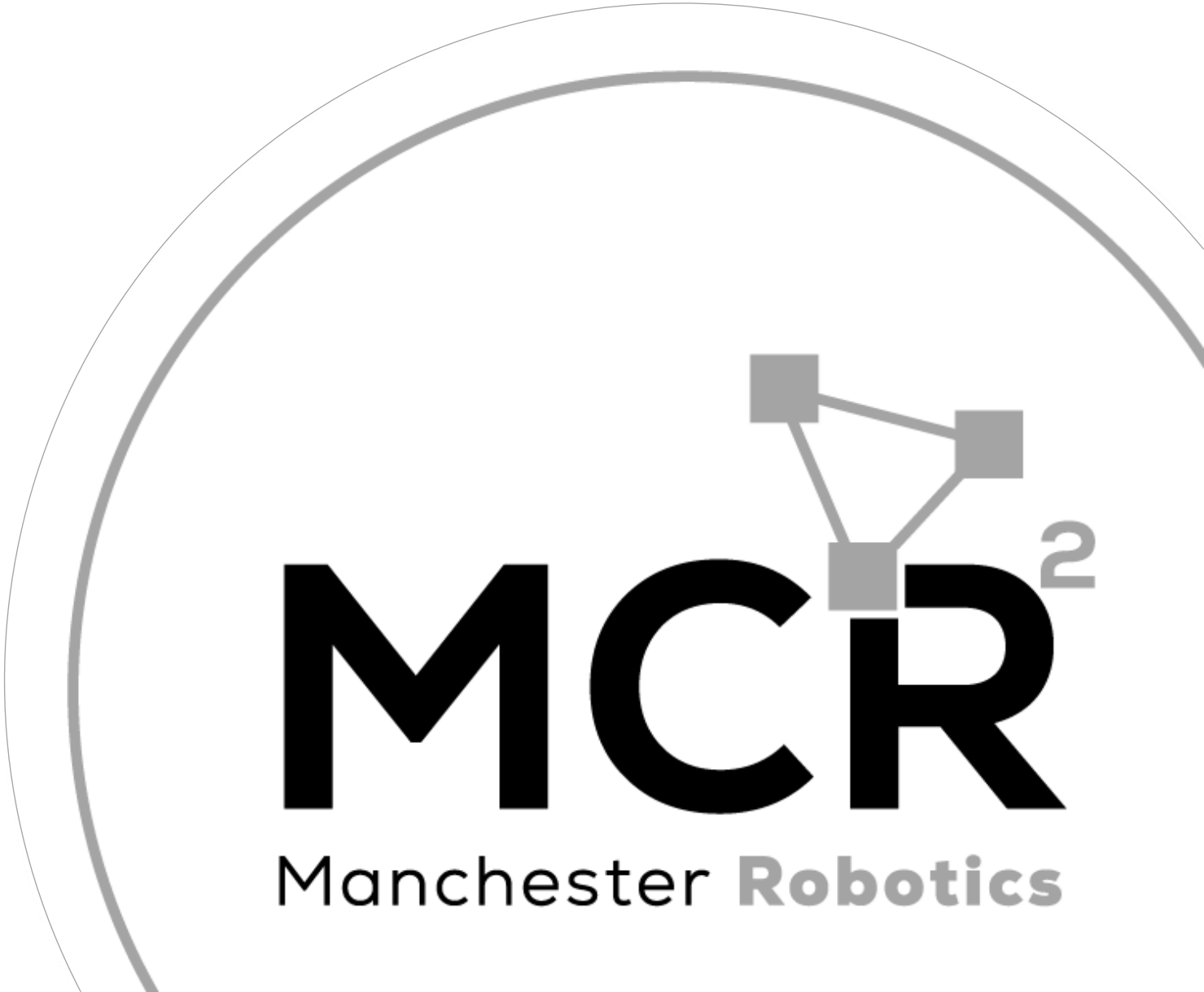
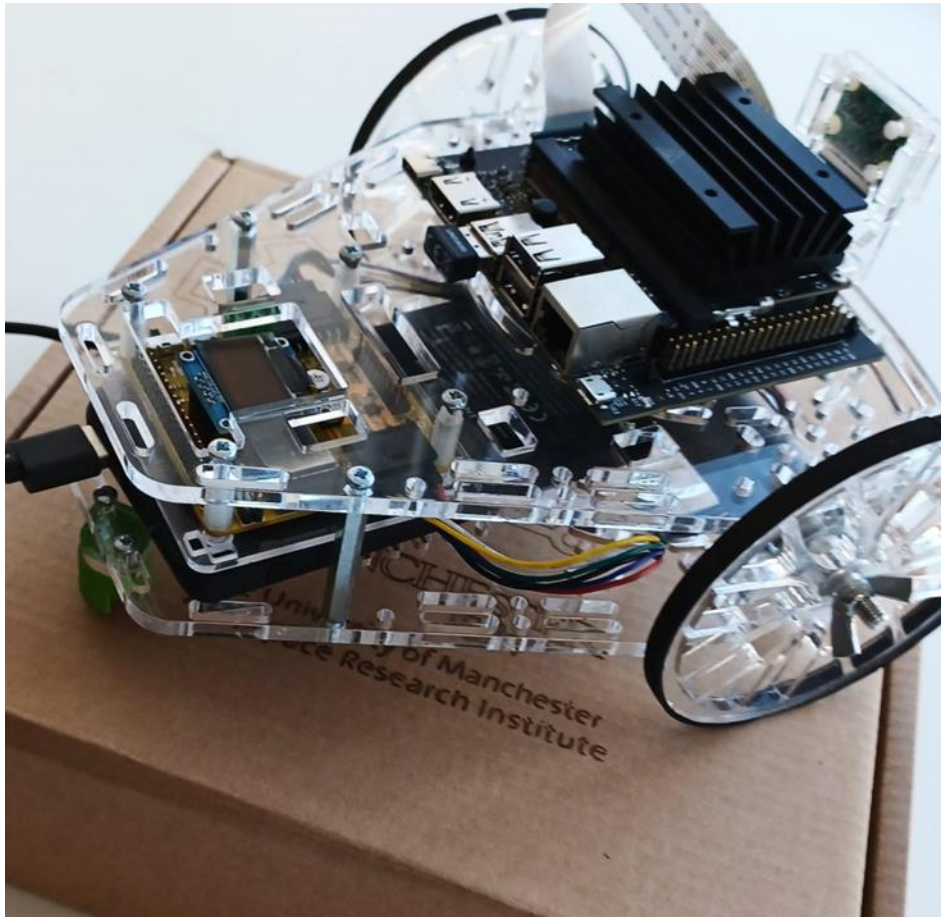


Puzzlebot

- The Puzzlebot is available in various versions, offering a broader range of opportunities to learn about robotics.
- The main three versions are:
  - The Hacker Edition
  - The Laser Edition
  - NVIDIA Jetson Edition (NVIDIA Partnership)
  - Jetson/Lidar Edition (NVIDIA Partnership) *

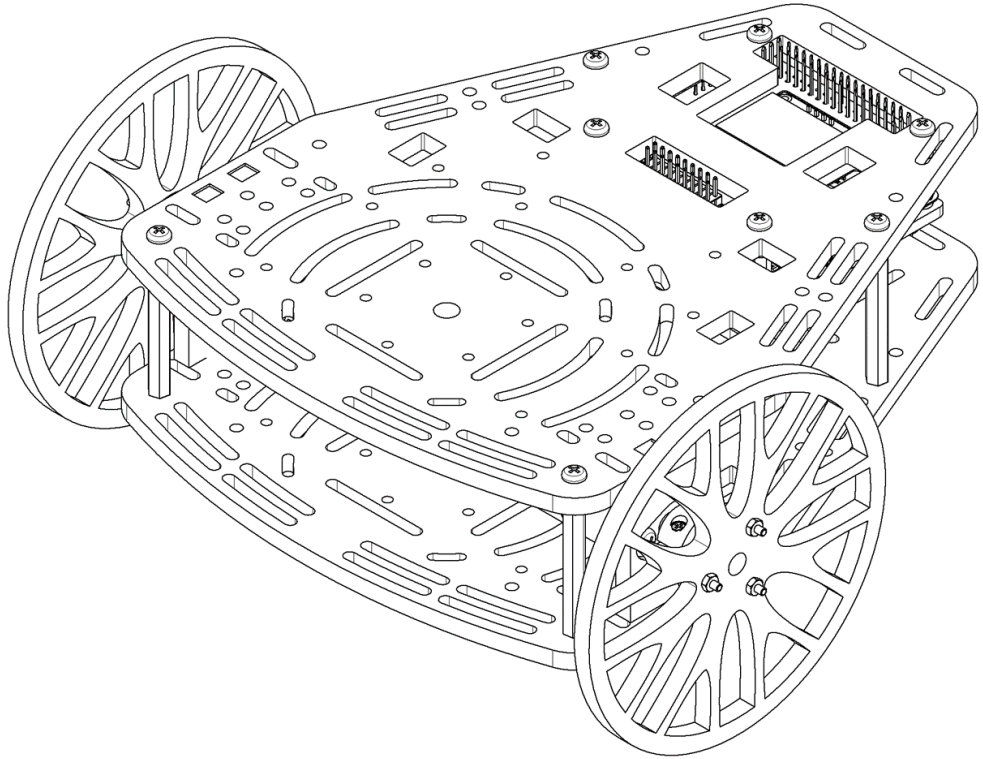
* Beta Testing



Puzzlebot: Hacker Edition

Introduction

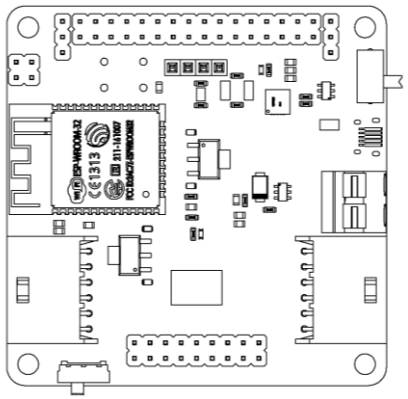
- The Puzzlebot Hacker Edition contains all the essential components needed to access meaningful robotics capabilities quickly providing a user-friendly platform for incorporating a wide range of advanced add-on feature sets.
- Powered by the Hacker Board for algorithms which require real-time processing capabilities, such as low-level control, navigation, obstacle avoidance, 2D-LiDAR-based SLAM, and fault-tolerant control.



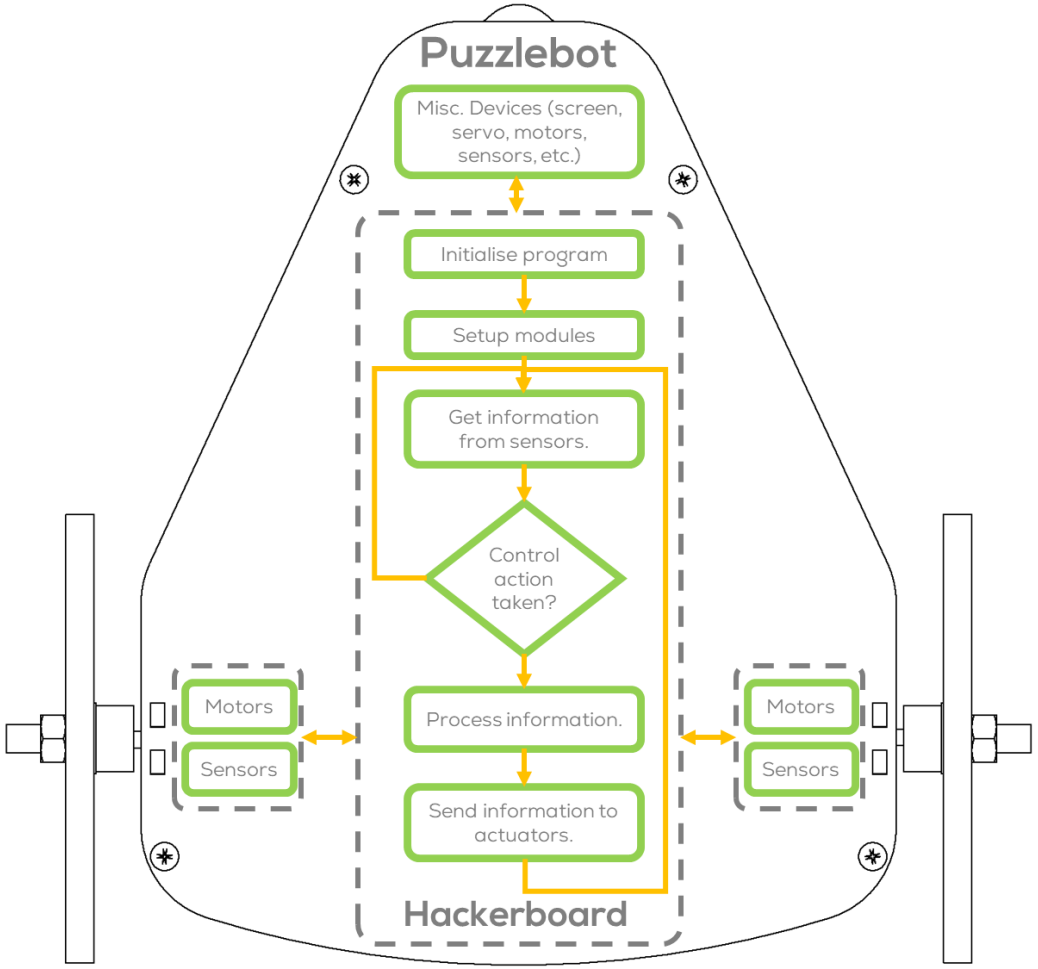
Puzzlebot: Hacker Edition

Control Mode: Standalone Configuration

- The user directly programs the Hacker Board.
- Libraries for control and communication with computing units, sensors, and actuators are provided by MCR2.
- 3rd Party peripherals can be attached.



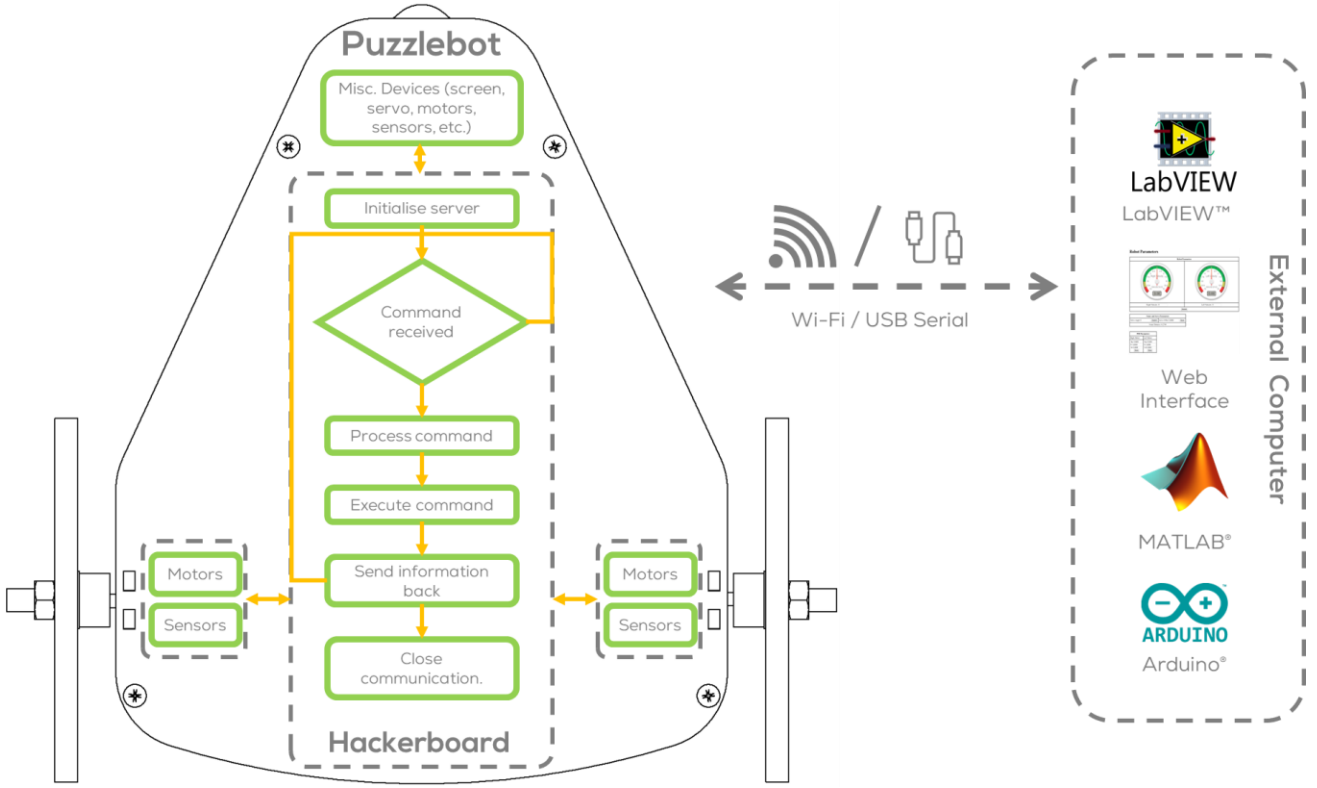
Hackerboard



Puzzlebot: Hacker Edition

Control Mode: External-Control Configuration

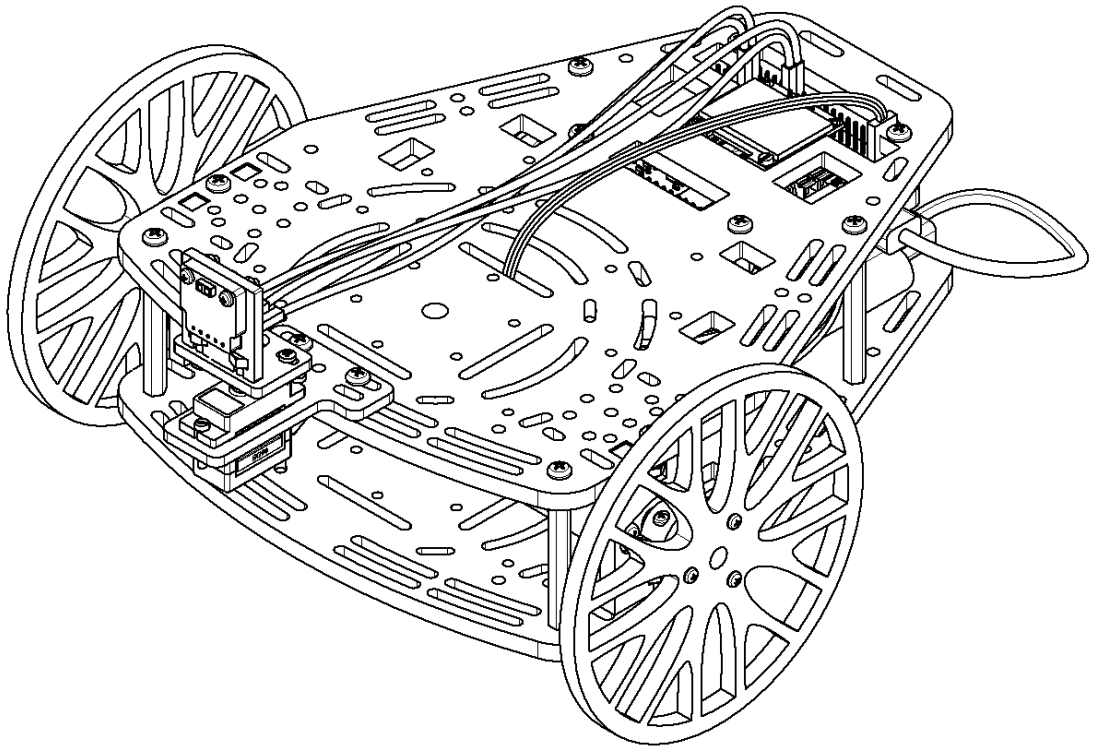
- The robot is controlled from an external computer via Wi-Fi or Serial Communication.
- The internal firmware and libraries for communicating with the robot, its sensors and actuators are provided by MCR2. For more information, visit our webpage.
- Basic web interface for configuring and testing provided.
- MCR2 provides MATLAB , ROS and LabVIEW libraries for communicating with the robot.
- MATLAB and LabVIEW simulators are provided. No extra libraries for required working.



Puzzlebot: Laser Edition

Introduction

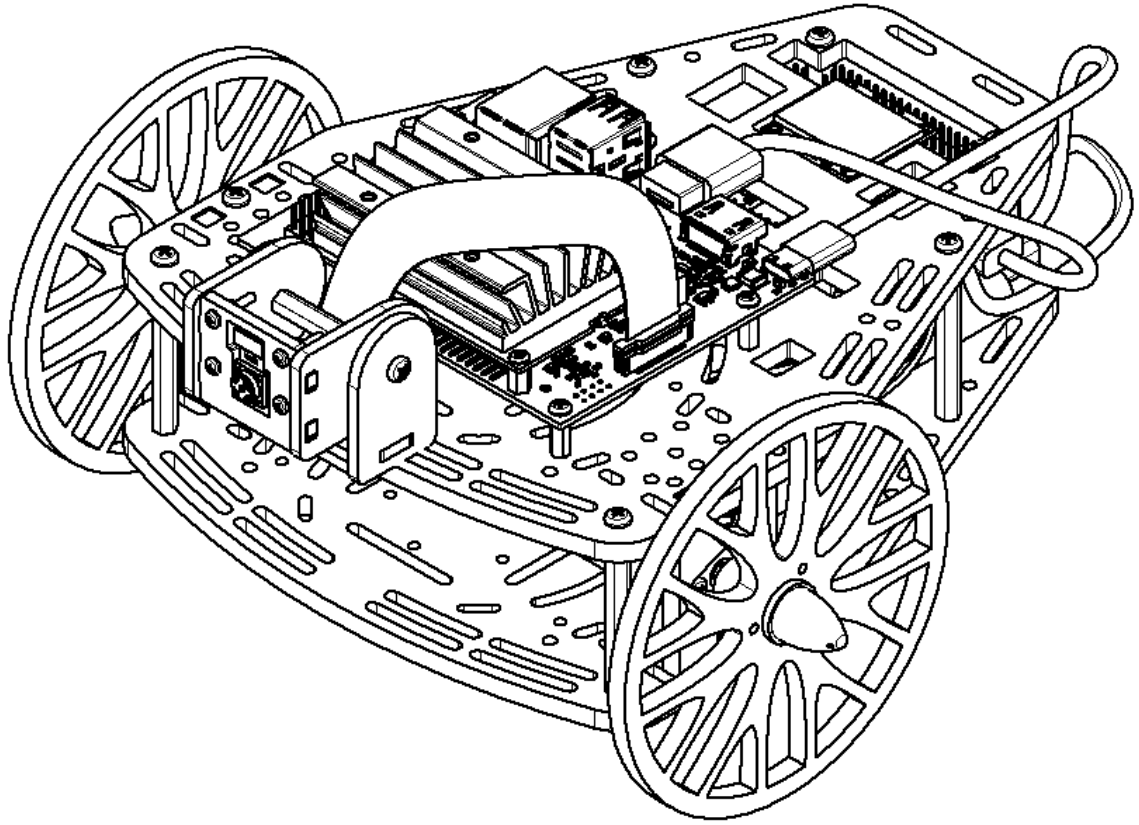
- The Puzzlebot Laser Edition is an extension of the Puzzlebot Hacker Edition, which encompasses the VL53L1X TOF (Time Of Flight) Laser Sensor and a 9g Servo Motor to provide more autonomous capabilities such as obstacle avoidance, 2D mapping, etc.
- The Puzzlebot Laser Edition has the same configurations as the Puzzlebot Hacker Edition.
- MCR2 provide the libraries required for communicating with the sensors and actuators in both configurations.



Puzzlebot: NVIDIA Jetson Edition

Introduction

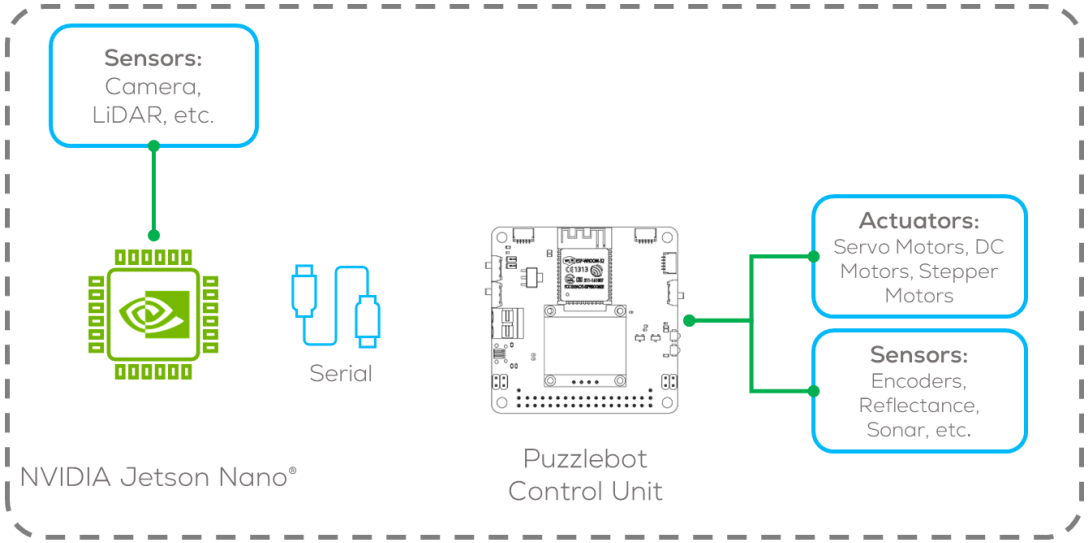
- The Puzzlebot NVIDIA JETSON® Edition is an extension of the Puzzlebot Hacker Edition encompassing an NVIDIA Jetson® CPU and a Raspberry Pi® Camera.
- Combining the power of the Hacker Board and the NVIDIA JETSON Nano® allows users to implement research-level, real-time algorithms such as AI & Computer Vision, SLAM and autonomous driving algorithms using ROS.
- The Puzzlebot NVIDIA JETSON® Edition works by communicating the Hacker Board (Plug and play) with the NVIDIA Jetson Nano®.



Puzzlebot: NVIDIA Jetson Edition

Control Mode: Puzzlebot ROS Connection

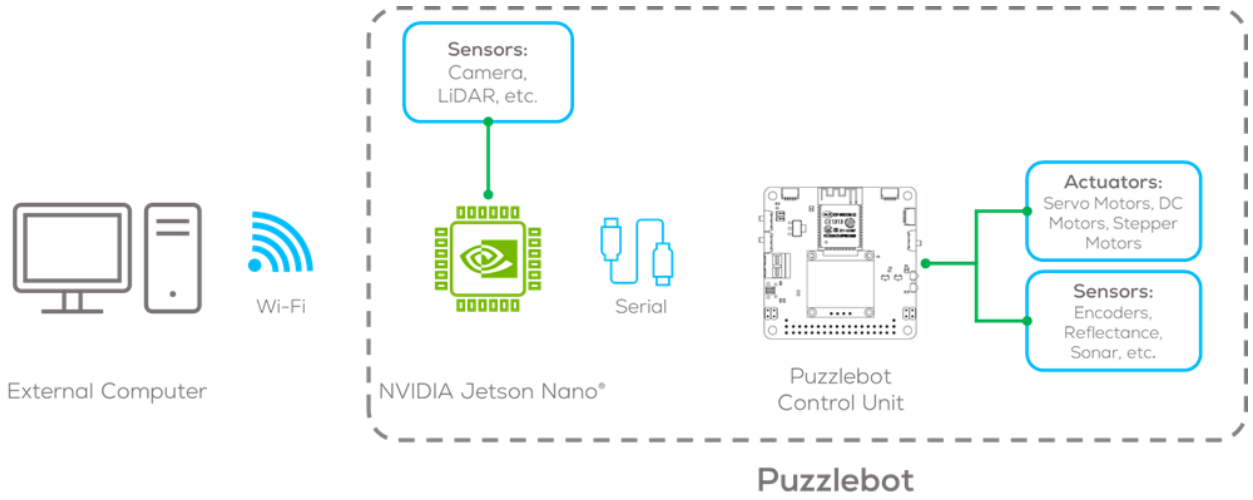
- The user can develop advanced robotic algorithms in ROS (Robot Operating System) using the computing power of the NVIDIA Jetson Nano® and communicate to the actuators and sensors using the Hackerboard.
- The Hackerboard and NVIDIA Jetson Nano® are connected via Serial (Communication Libraries with Hackerboard, Sensors and Actuators, provided by MCR2).



Puzzlebot: NVIDIA Jetson Edition

Control Mode: Puzzlebot ROS Connection Client

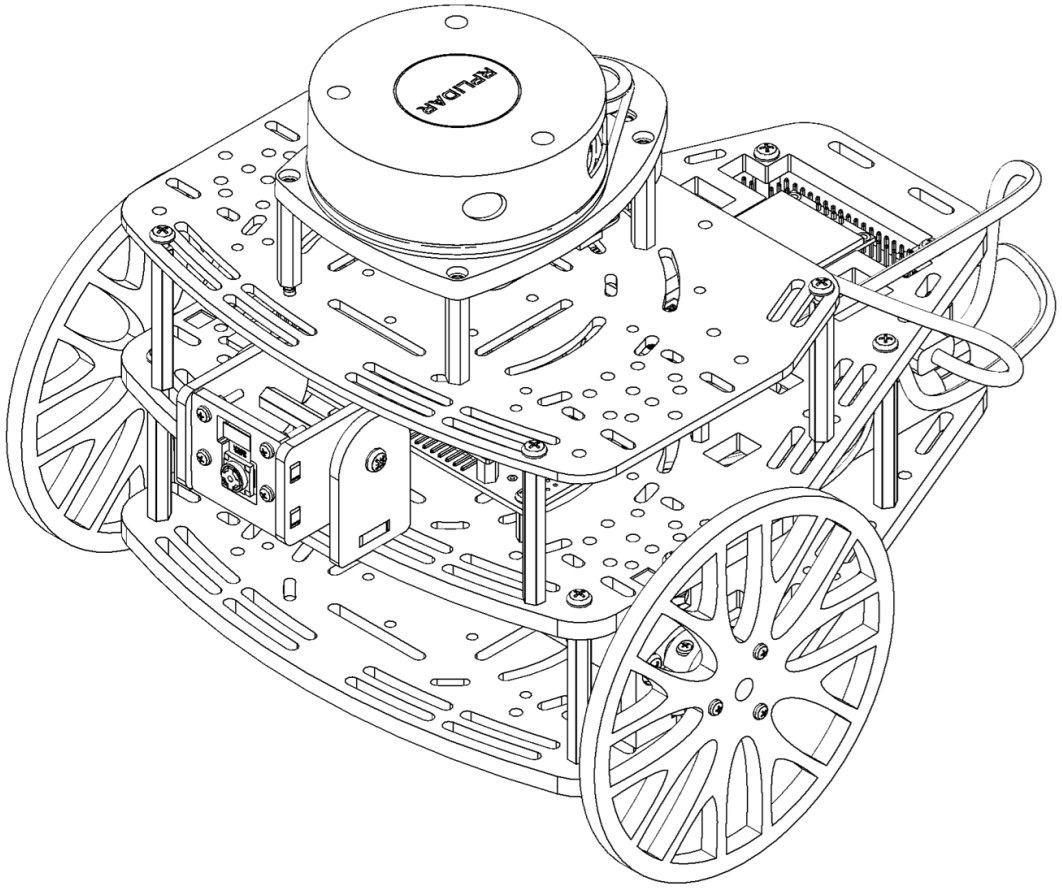
- In this configuration, the user can connect to the NVIDIA Jetson Nano® to monitor the functionality of the robot, monitor or control a process or simply control the robot wirelessly.
- This configuration works as the previous one, with the difference that, in this case, the user can connect to the External computing unit (ROS Master) via Wi-Fi.
- The ROS Master node runs in the NVIDIA Jetson Nano®, making this a suitable combination for Advanced Distributed Control.



Puzzlebot: NVIDIA Jetson/LiDAR Edition

Introduction

- The Puzzlebot NVIDIA JETSON® - Lidar Edition is another extension of the Puzzlebot Hacker Edition encompassing an NVIDIA Jetson® CPU, a Raspberry Pi® Camera and a LiDAR.
- This allows users to implement research-level, real-time algorithms such as AI & Computer Vision, obstacle avoidance and SLAM and autonomous driving algorithms using ROS.
- The Puzzlebot NVIDIA JETSON® - Lidar Edition in the same configurations as the Puzzlebot NVIDIA JETSON® Edition. The Lidar is directly connected to the Jetson Nano®, providing the user with the capability to use it with ROS.



Thank you

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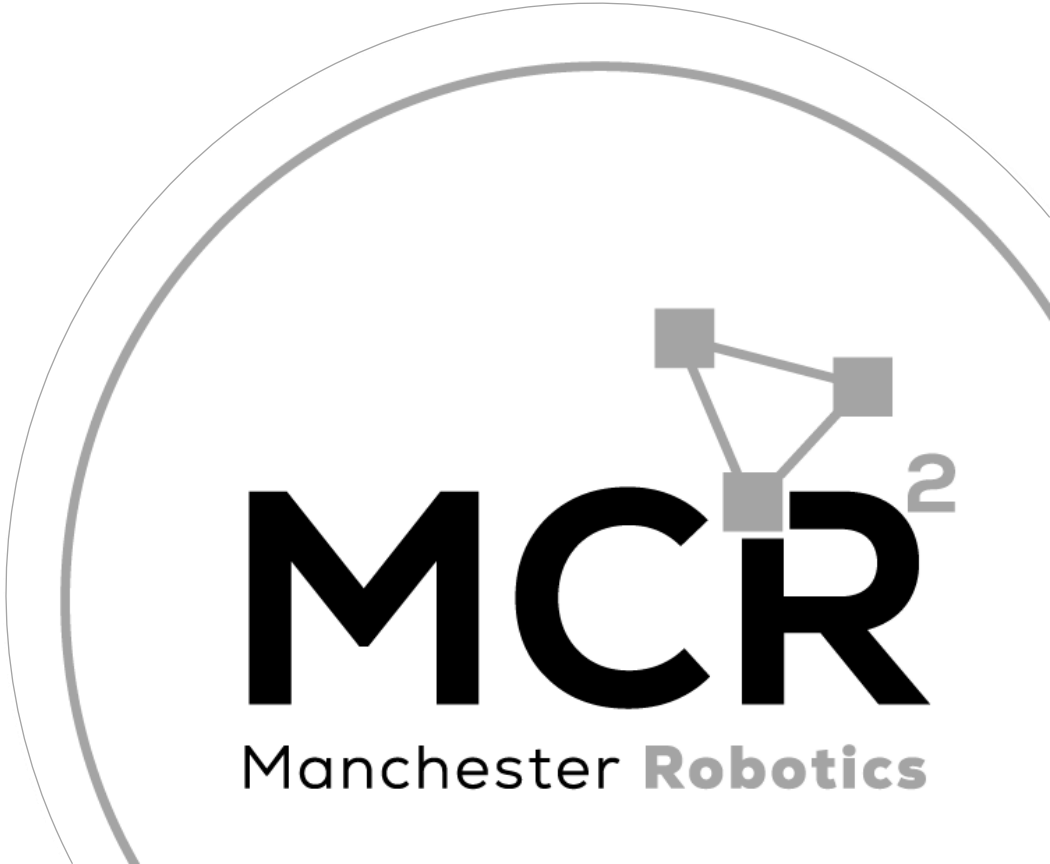

T&C

Terms and conditions

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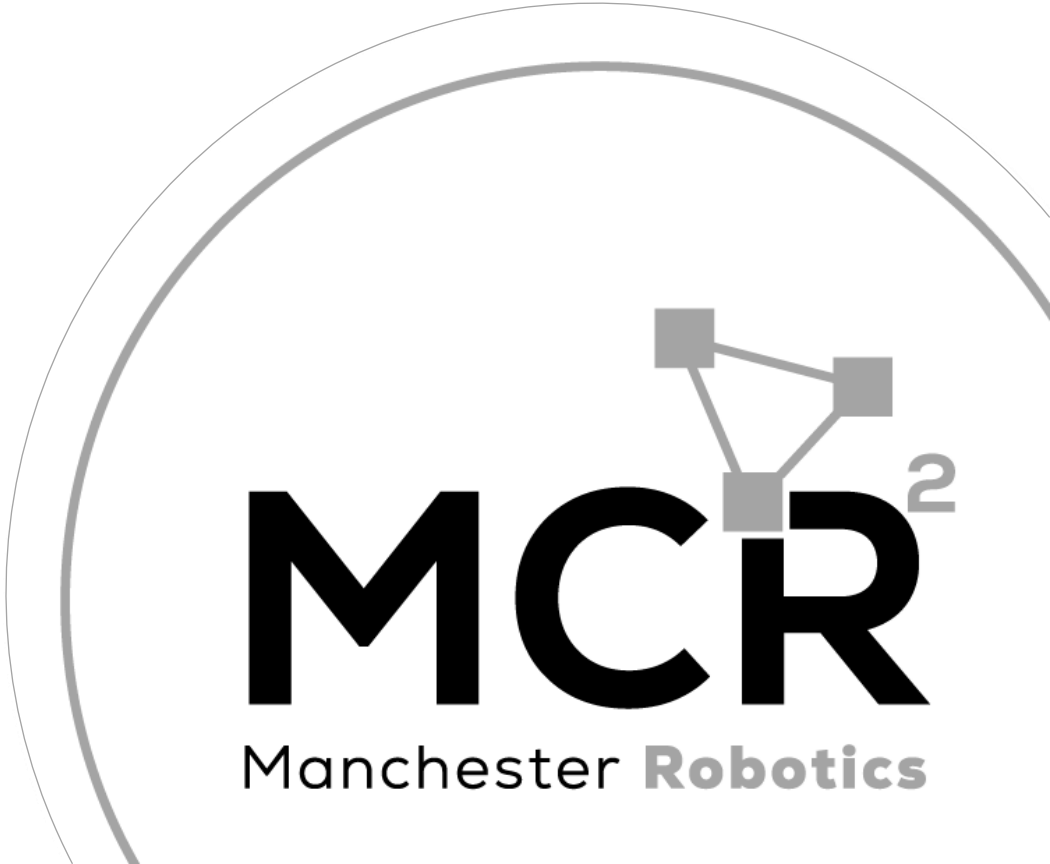

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