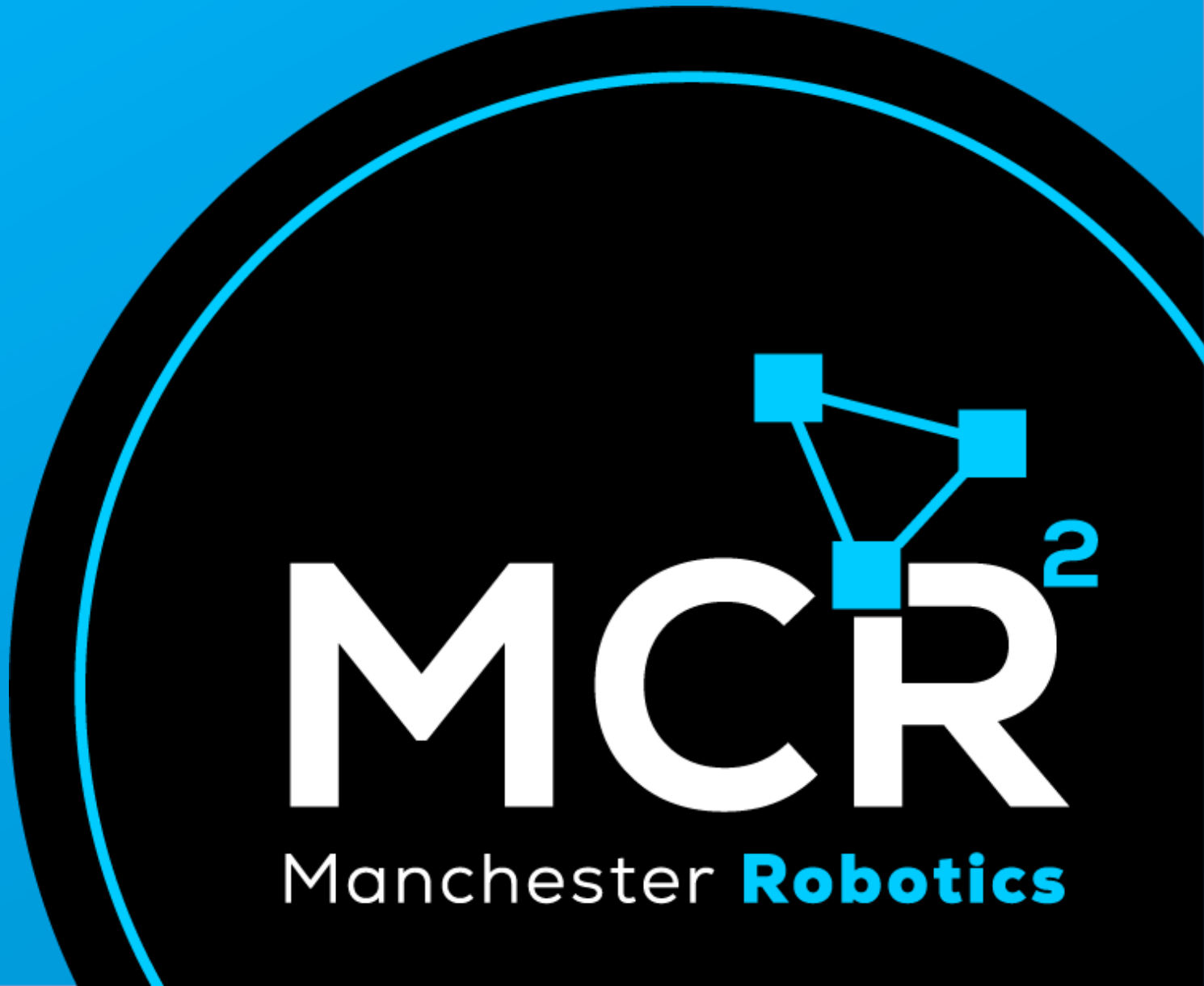
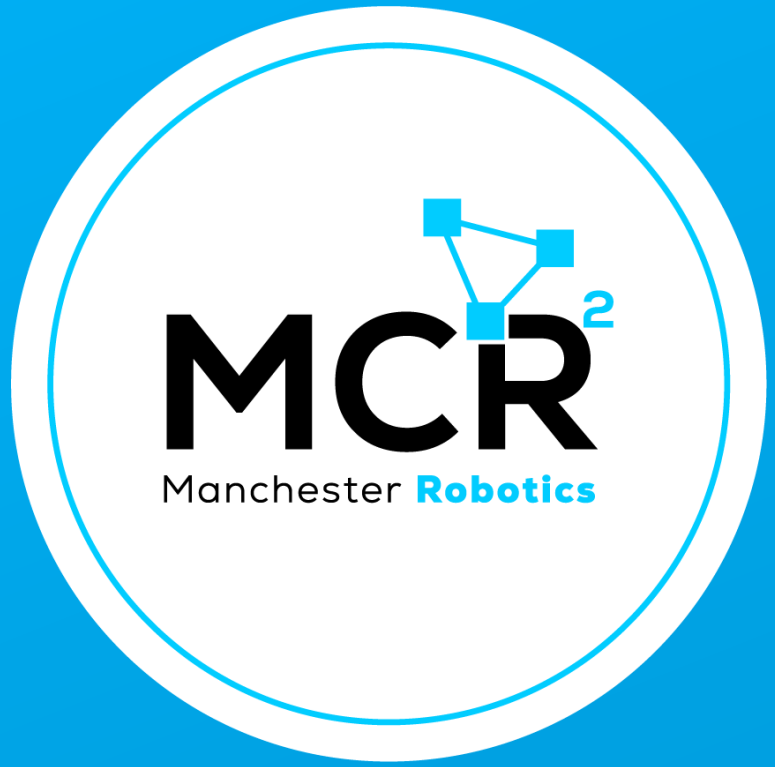
{Learn, Create, Innovate};

Democratising Robotics Education

Dr. Mario Martinez

CTO & Co-Founder

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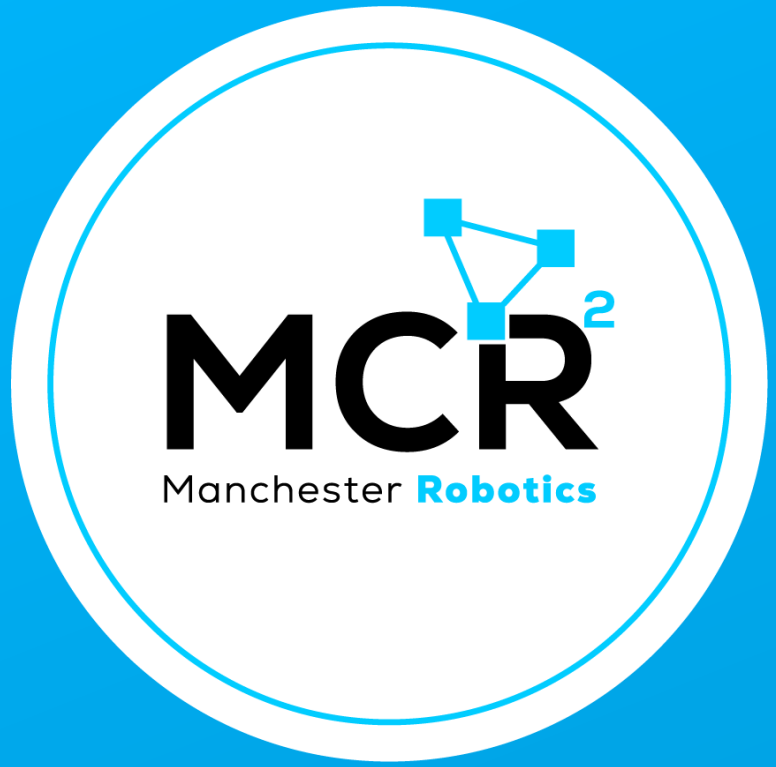
Manchester Robotics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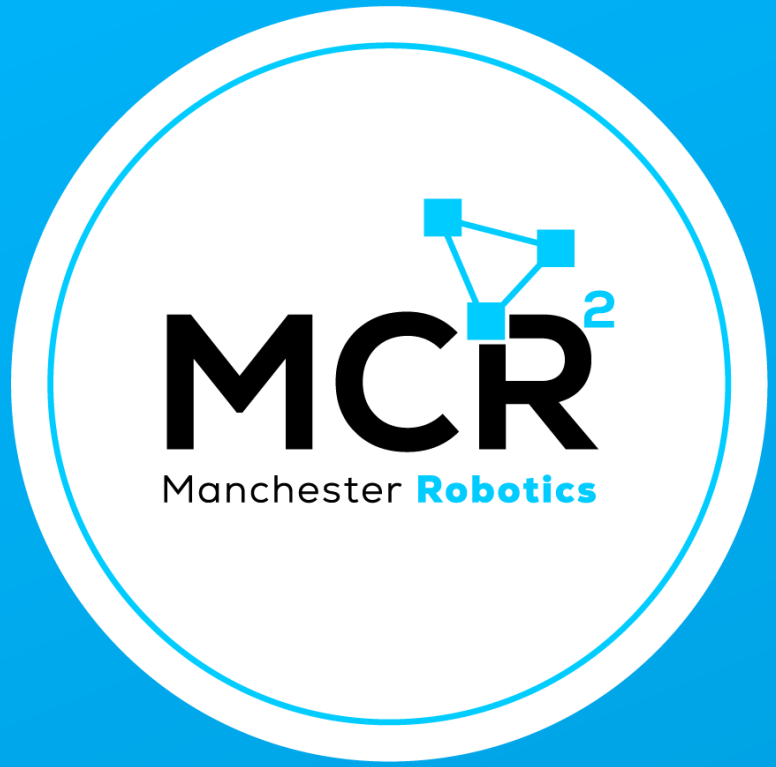
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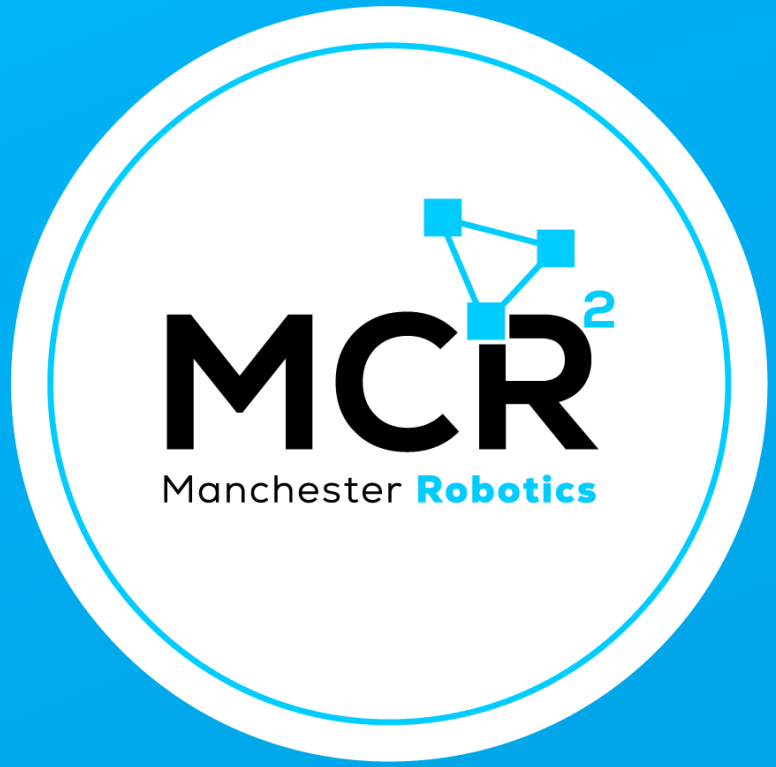
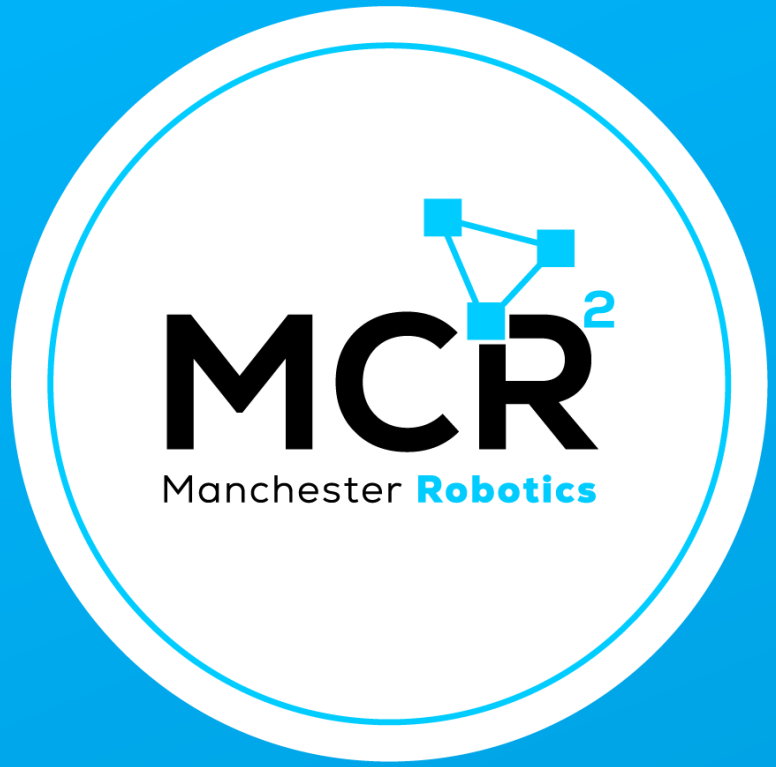


Robotics For Everyone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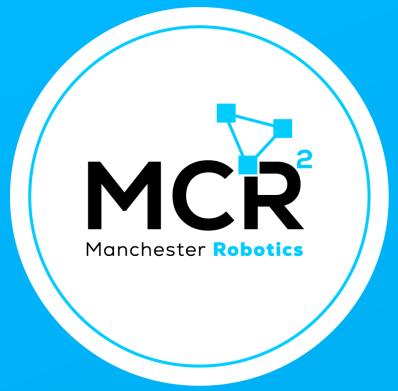
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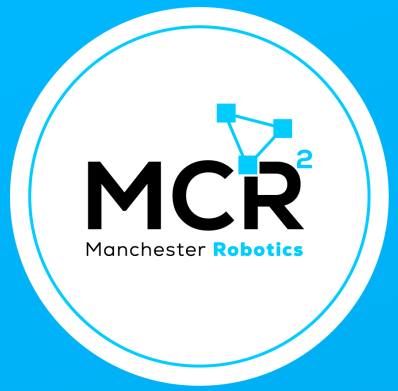

MCR 2
Manchester Robotics

Who We Are

Manchester Robotics Limited was born as a spinout company from The University of Manchester in the United Kingdom.

It was an initiative of the Robotics Research Group within the Aerospace Research Institute.

The Team

Gillian Kavanagh

Innovate UK Edge IGS

Dr. Alexandru Stancu

CEO, Co-Founder

Prof. Constantinos Soutis

Director, Co-Founder

Dr. Mario Martinez

CTO, Co-Founder

Dr. Eduard Codres

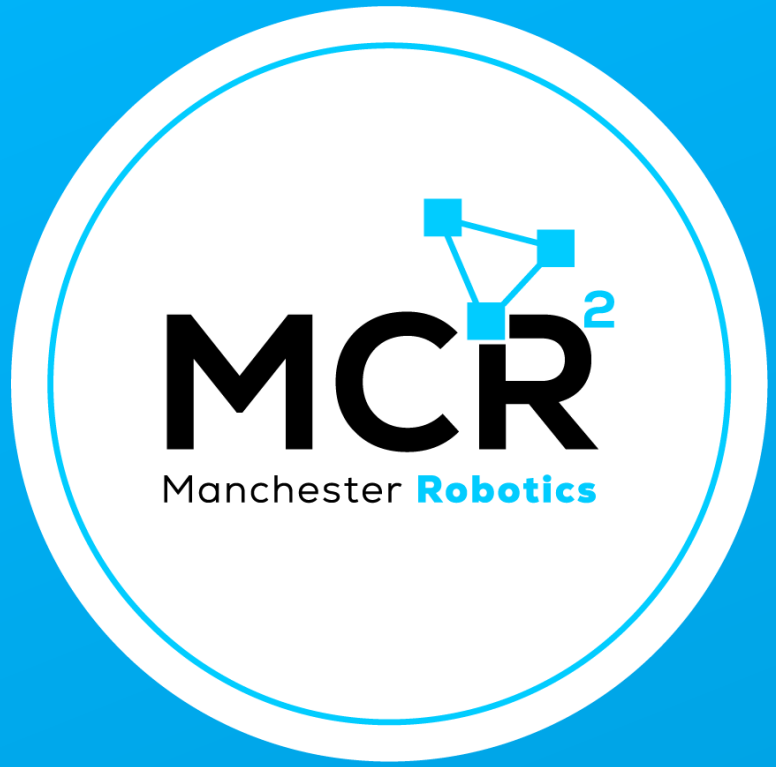
Head of Innovation and Research, Co-Founder

Andrew Taylor

Commercial Lead

Phil Kemp

Business Advisor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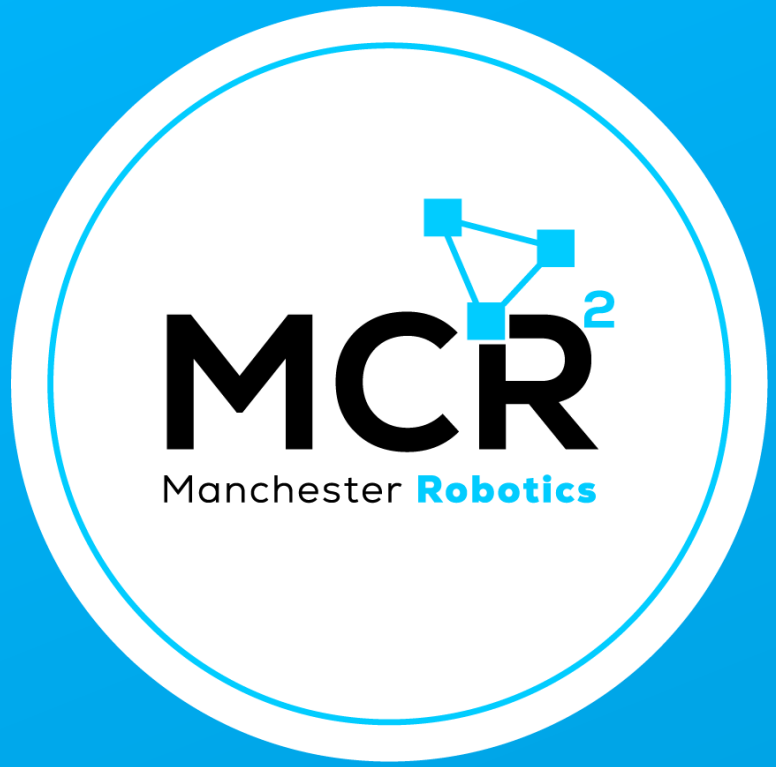


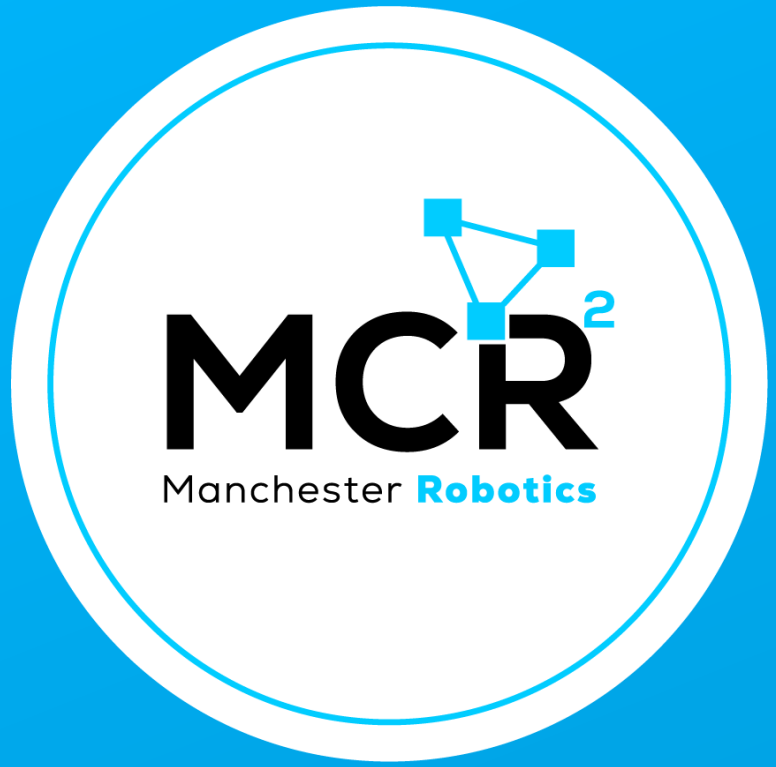
Our Story

Our Story

- Educational Robotic platforms were not affordable.
- Robotic education started to become inaccessible for students and universities.
- So, as researchers in robotics, we built our own: Affordable, reliable, and just as capable.
- We didn't stop at hardware—we provide a full robotics curriculum that made NVIDIA interested in partnering with us.

What Does It Take to Become a World-Class Robotics Engineer?

> *" For us robotic democratisation is not a concept… its our way of thinking, working… being."*
>
> *Professor Constantinos Soutis, Director*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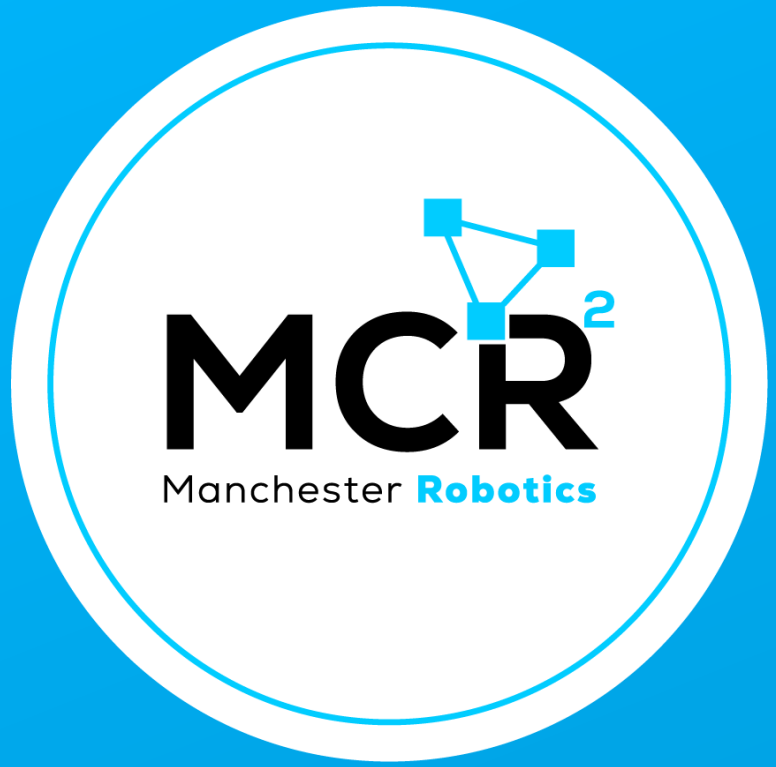
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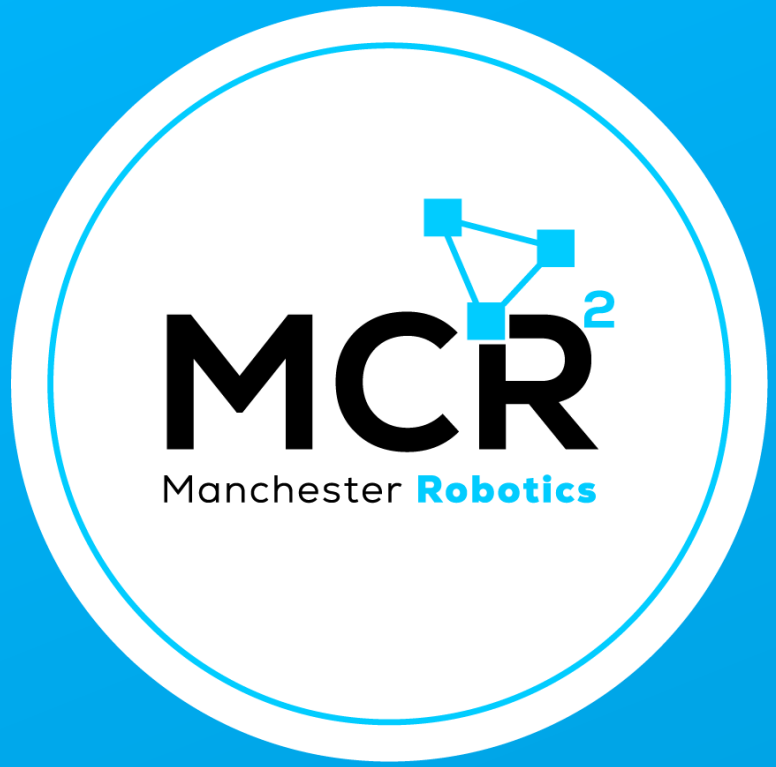


Problems We Solve

Problems We Solve

> *"Education is evolving so we need to evolve with it …"*
>
> *Dr Alexandru Stancu, CEO/Director*

Universities

- Fragmented Teaching
- No problem Solving
- Lack of robotic platforms
- The bigger picture is lost

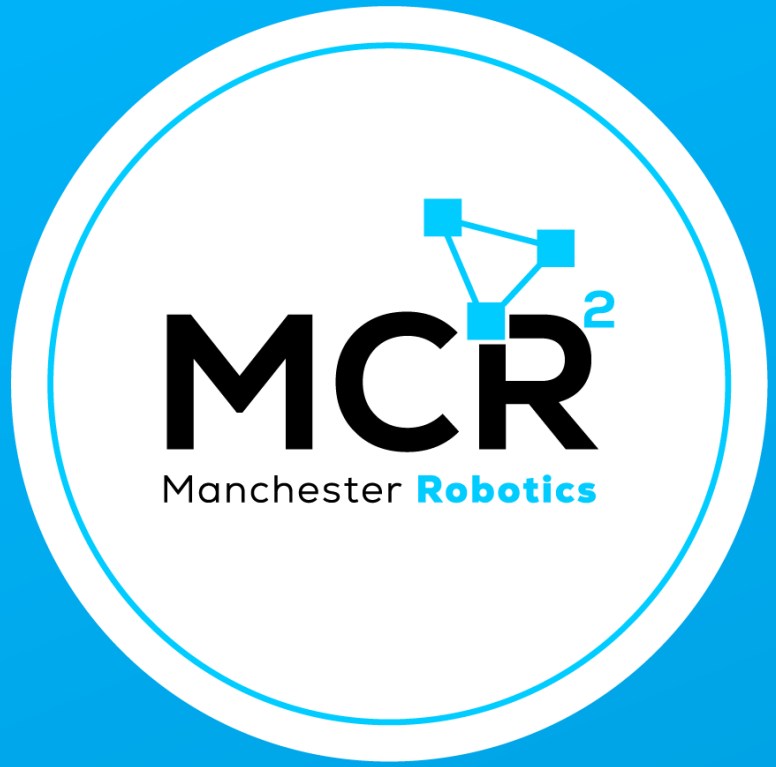
Industries

- Skills Gap
- Untrained employees
- Lack of practical training.

Hobbyists

- Too hardware-oriented.
- Lack of advanced applications and skills.
- The bigger picture is lost.

Higher Education, industry/corporates and Hobbyists are not keeping up with the rapid change and adoption in AI and Robotics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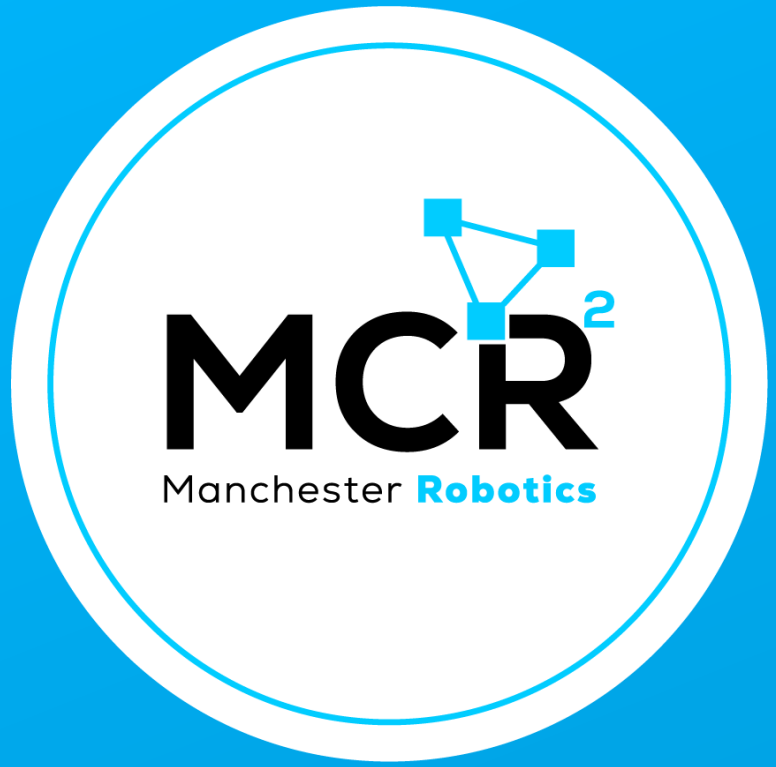
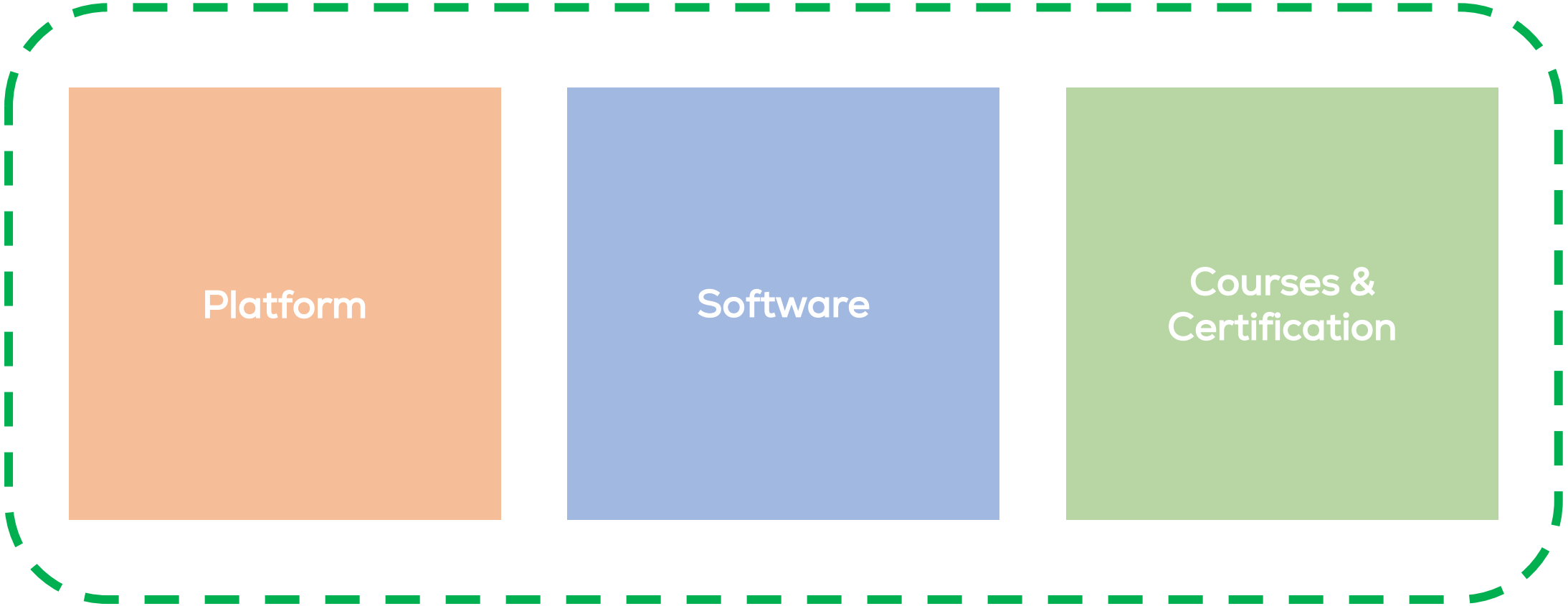


Our Solution

Our Solution: The Educational Robotics Ecosystem



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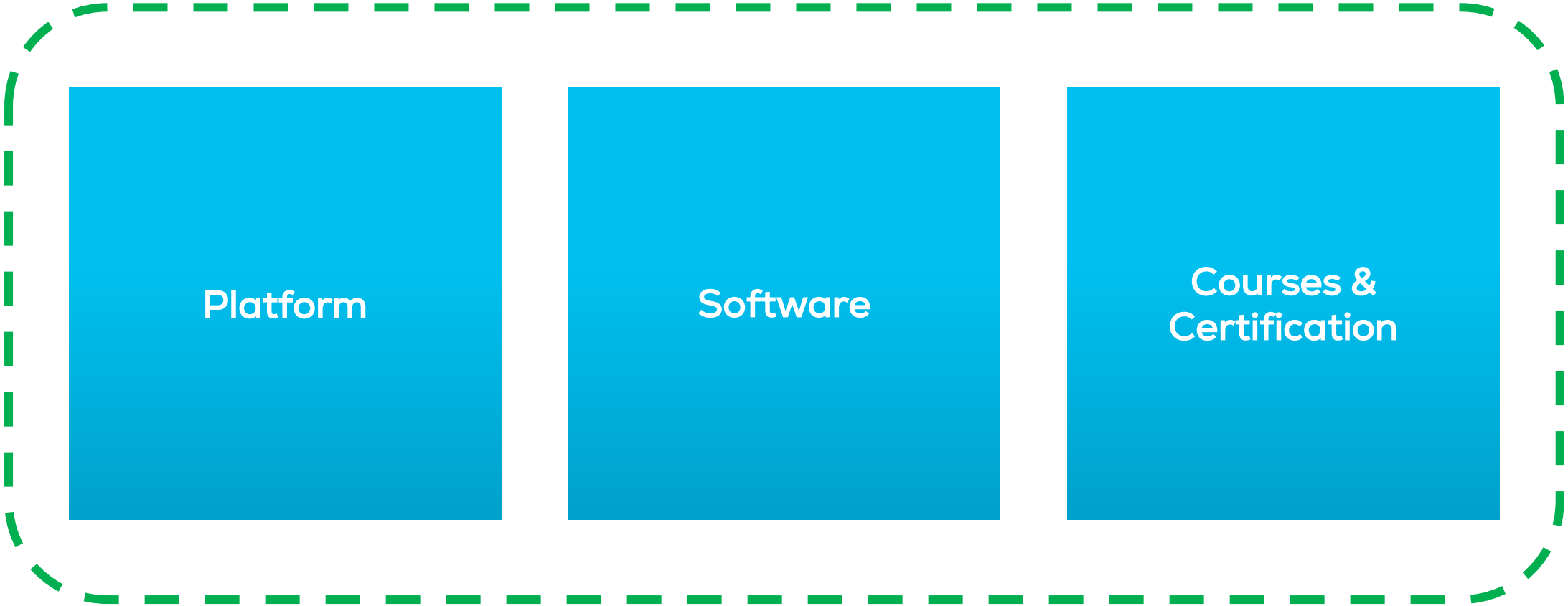

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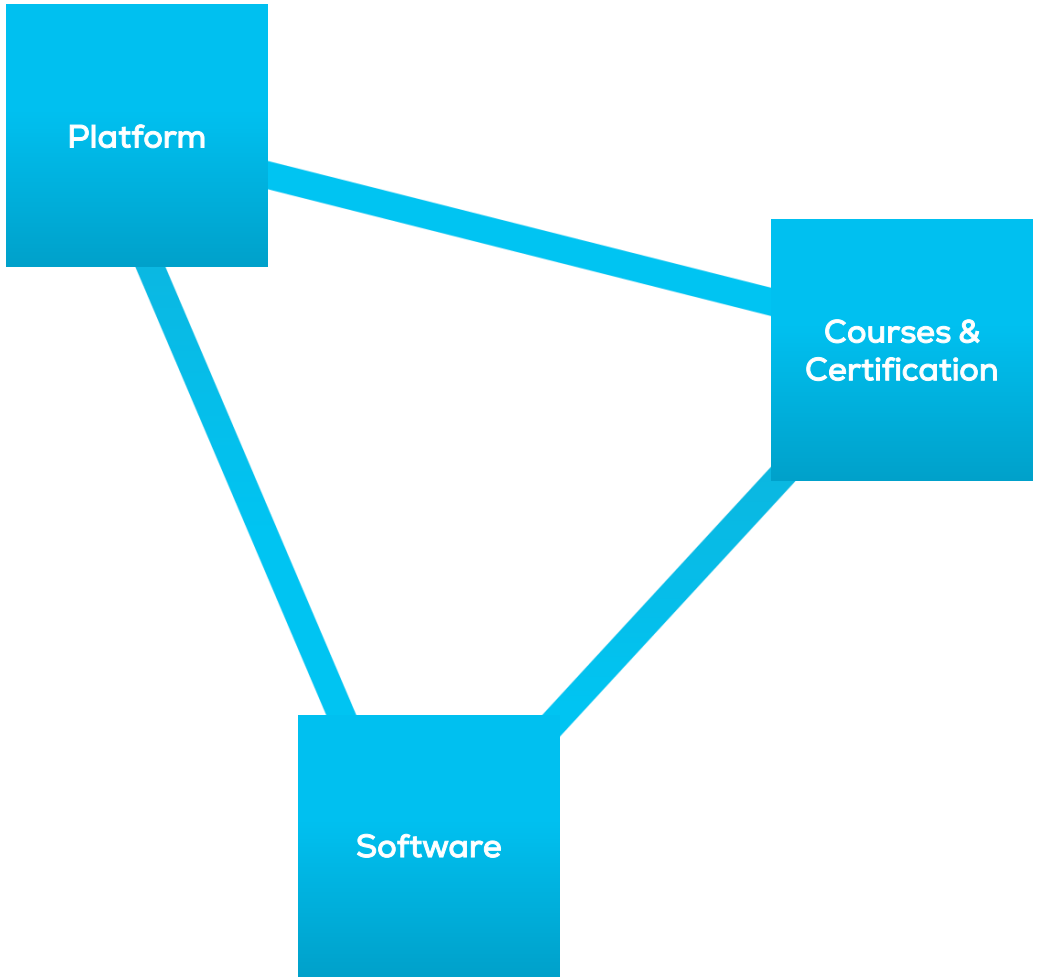

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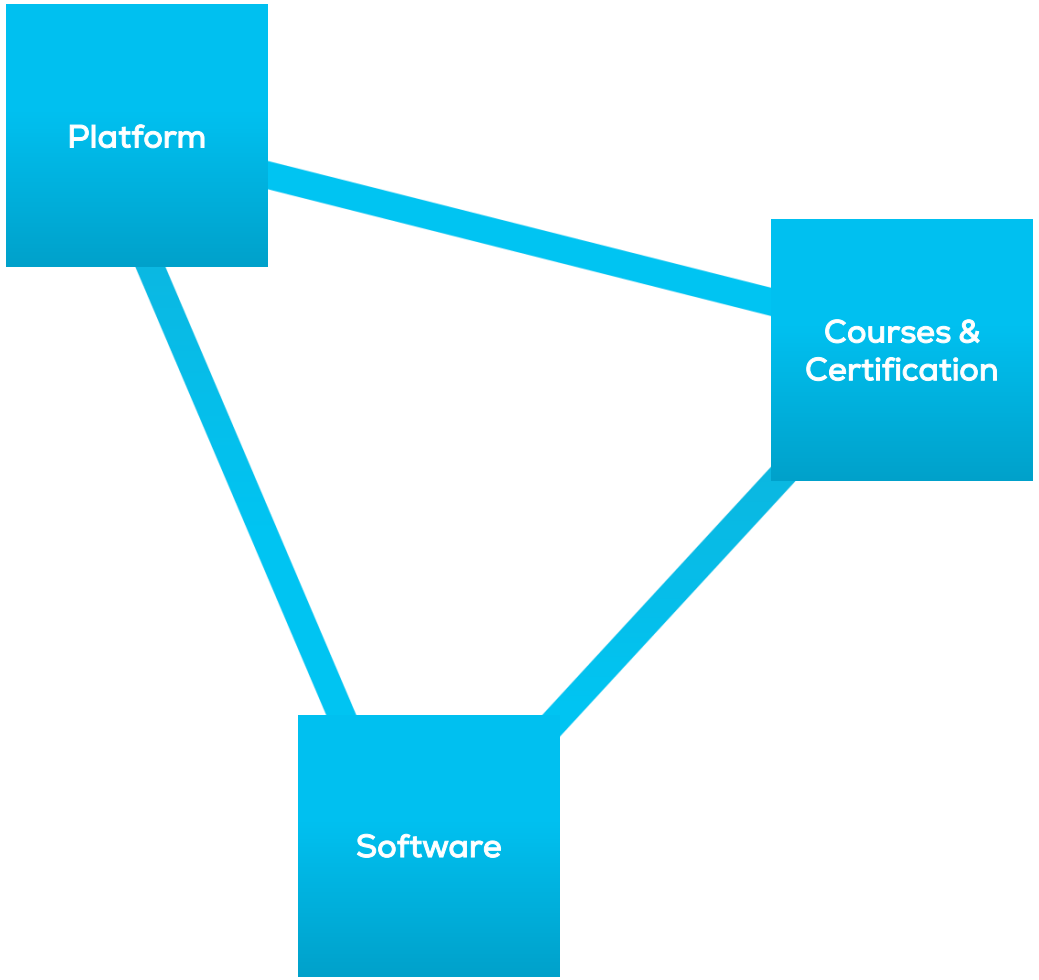
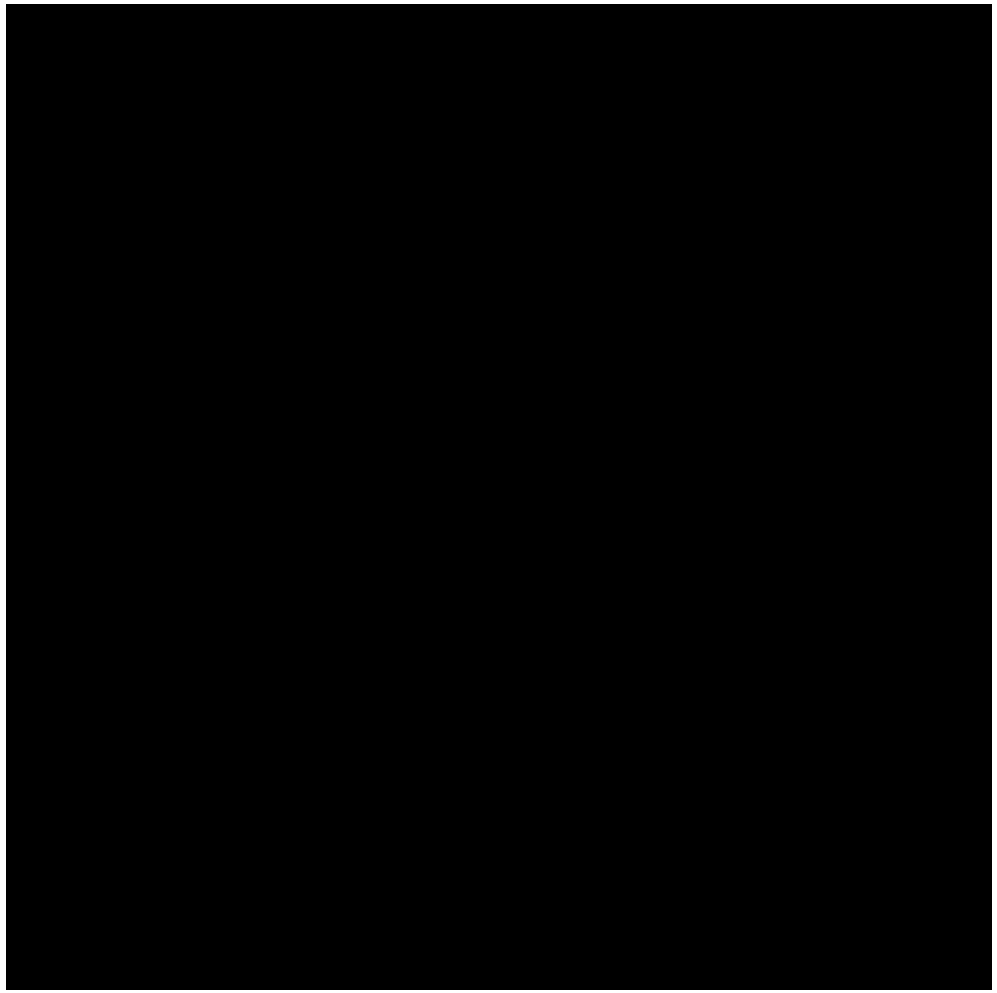


Our Solution: Platform

The Puzzlebot

- Affordable, customisable, modular, and open-source platform.
- Compatible with Python, MATLAB, LabVIEW, and ROS.
- Designed for beginners to advanced researchers.



Our Solution: Software

Puzzlebot SDK Suite

- A complete robotics SDK that takes you through the path of “The Autonomy Hierarchy”.
- Three-tier learning approach: Simulator, real-world testing, and industry application.
- Vertical integration: Start from zero knowledge and progress to AI-based robotics.
- Designed for students, researchers, and industry professionals.

Puzzlebot SDK

Our Solution: Courses & Certifications

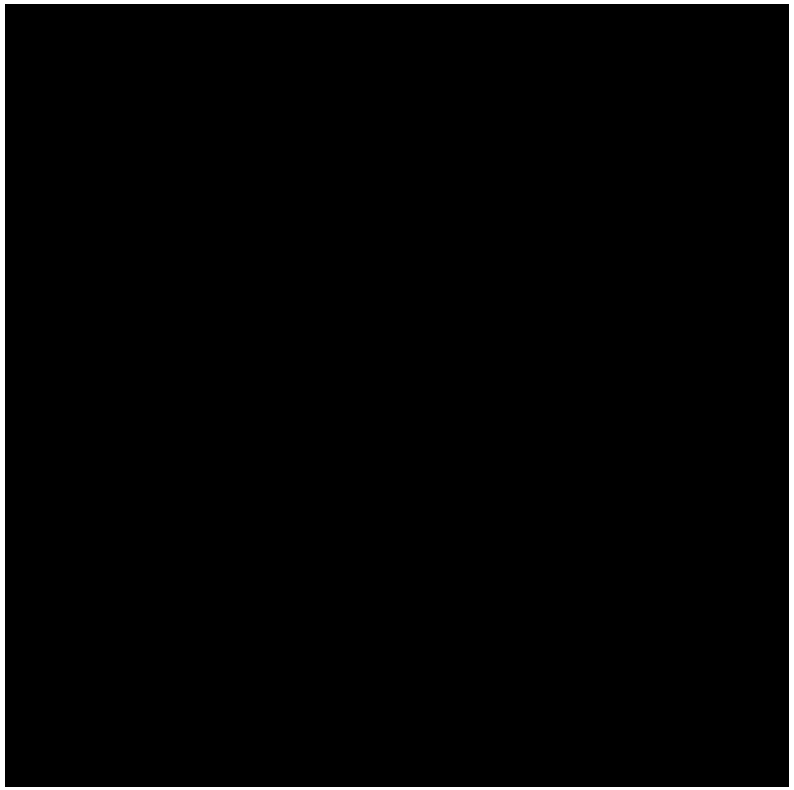
Manchester Robotics Learning Path

Basic Certification: Introduction to robotics, programming, and control.

Professional Certification: Intermediate robotics applications, including AI and SLAM.

Specialist Certification: Advanced robotics, perception, and decision-making.

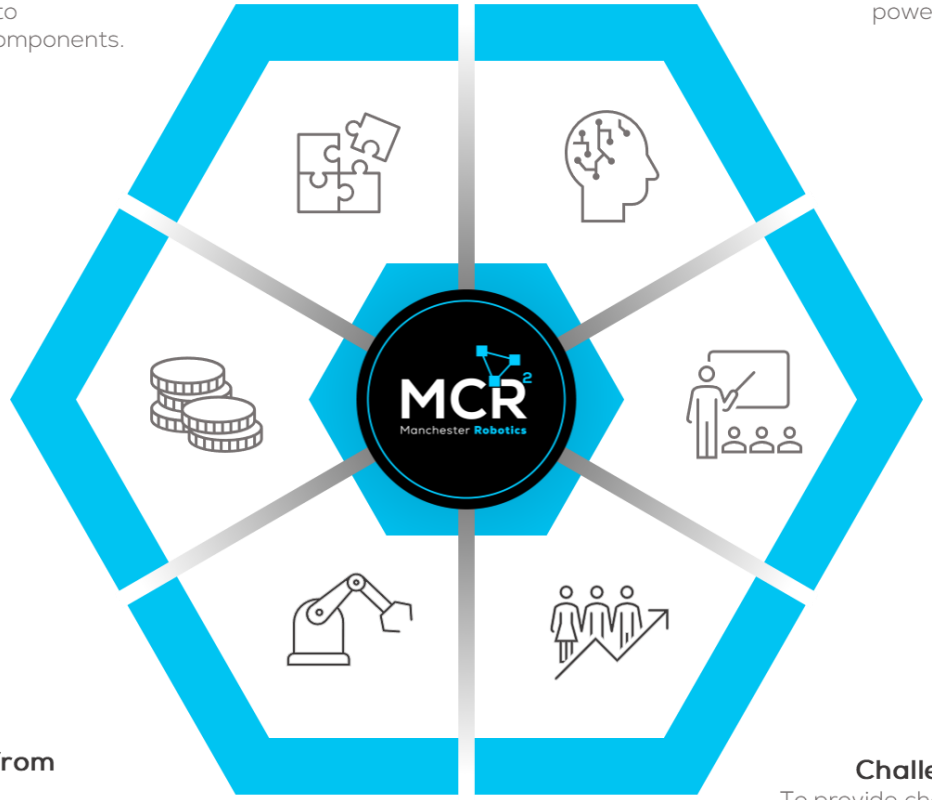
Ambassador Certification: Robotics leadership, research, and real-world applications.



What Makes Us Different?

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

Advanced Capability
The circuit board is designed around powerful microprocessors and microcontrollers.

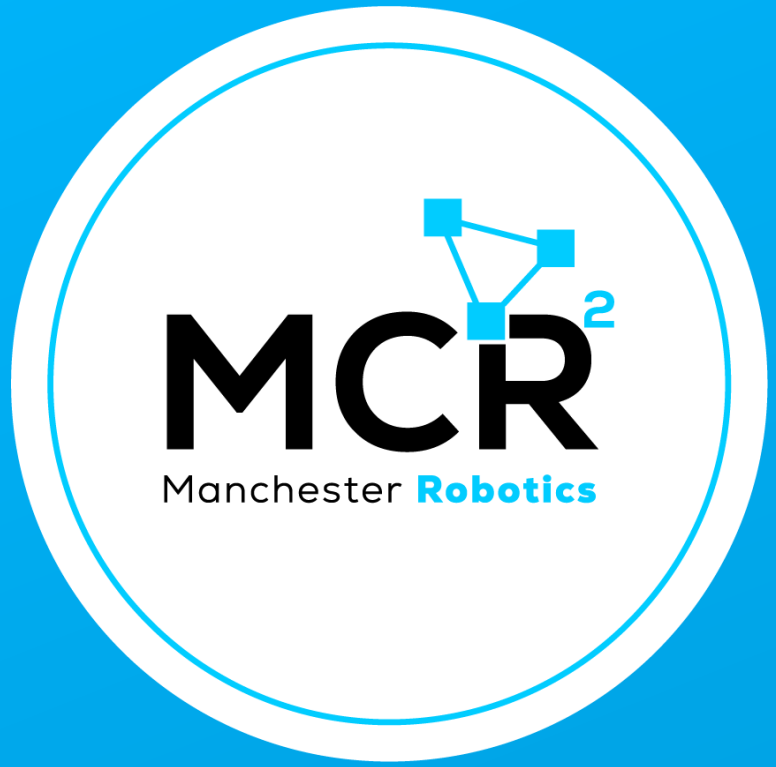


Accessible Price Point
We design with the intent of manufacturing at high volume to keep unit costs low.

Basic to Advanced Courses
Basic to advanced robotics courses developed alongside our partnership with NVIDIA

Solve real problems from industry
To help primary & secondary sectors of the global economy rapidly adopting robotics.

Challenge based approach
To provide challenges at each block, to engage the learners and improve their skills.


MCR2
Manchester Robotics

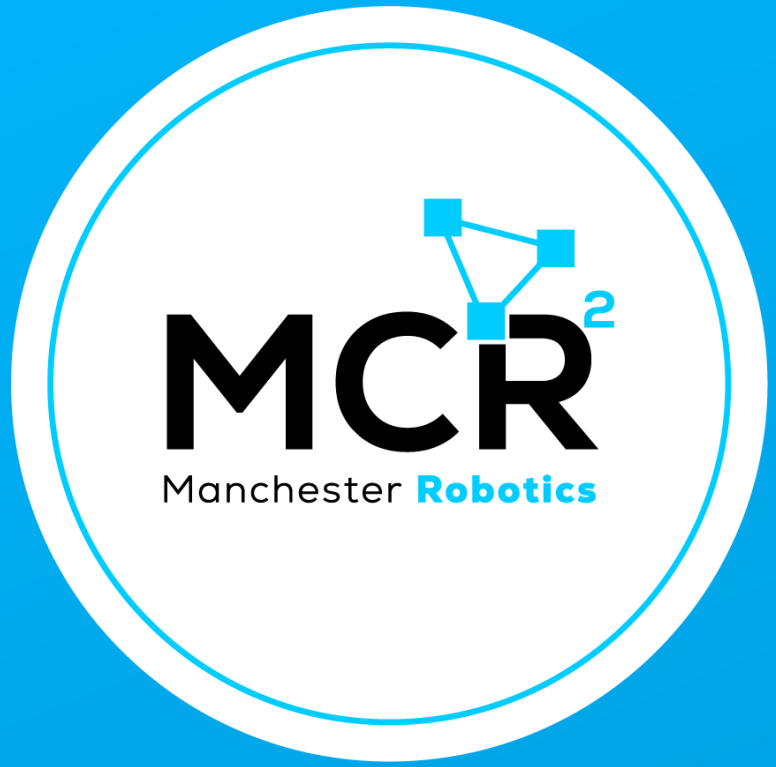
MCR²
Manchester Robotics

Real-World Impact

Real-World Impact

Global Reach & Industry Adoption

- University of Manchester, Durham University, and others.
- In Mexico: MCR2 Collaborates with UPY, Tec de Monterrey, Tecnológico Nacional de México.
- Collaboration with NVIDIA to integrate AI and robotics education.
- Published papers, research projects, and industry partnerships.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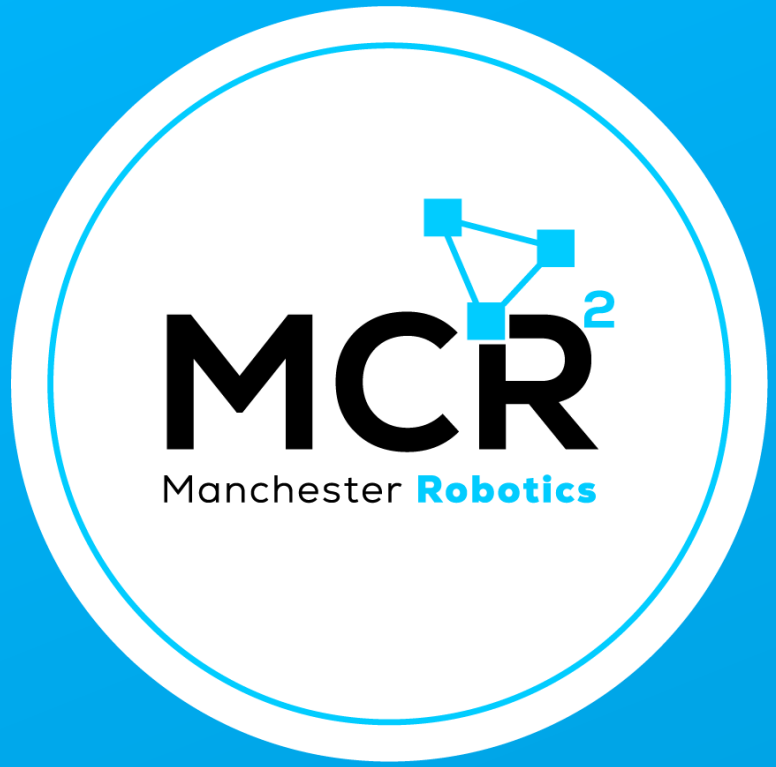
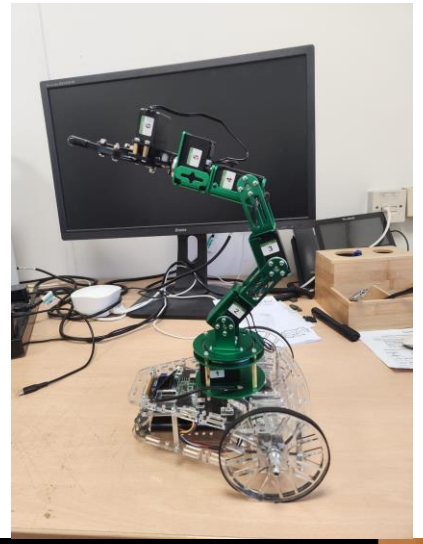


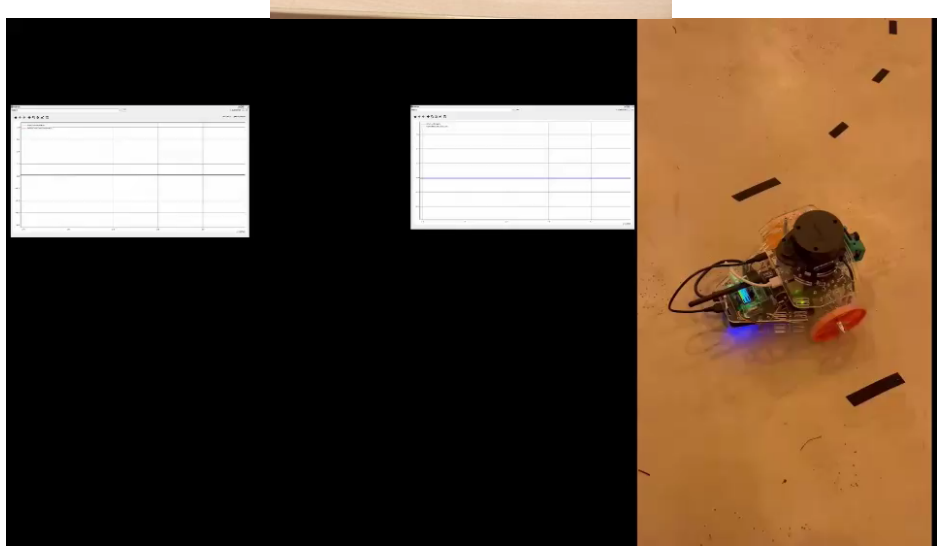
New Developments

New Developments

Expanding the Ecosystem

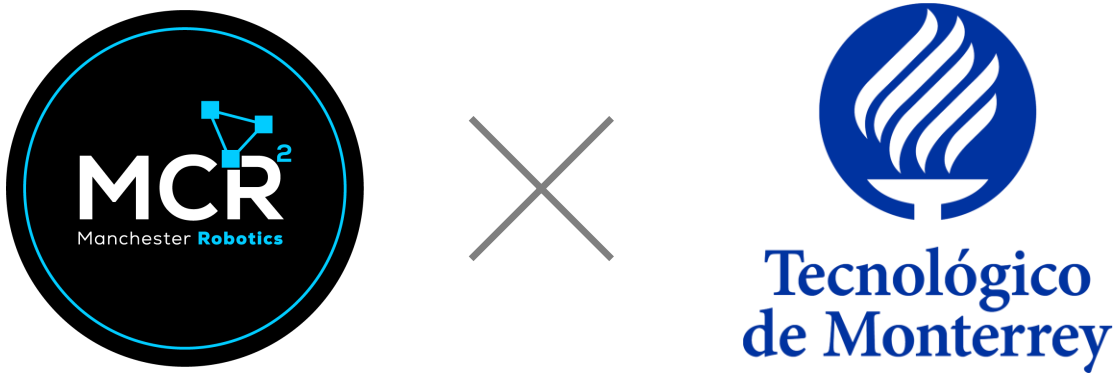
- Puzzlebot Drone Ed- An educational drone for aerial robotics.
- Puzzlebot Arm - Extending capabilities for manipulation tasks.
- Interactive Robotics Experience - A fully immersive way to learn robotics through digital twins and real-world testing.





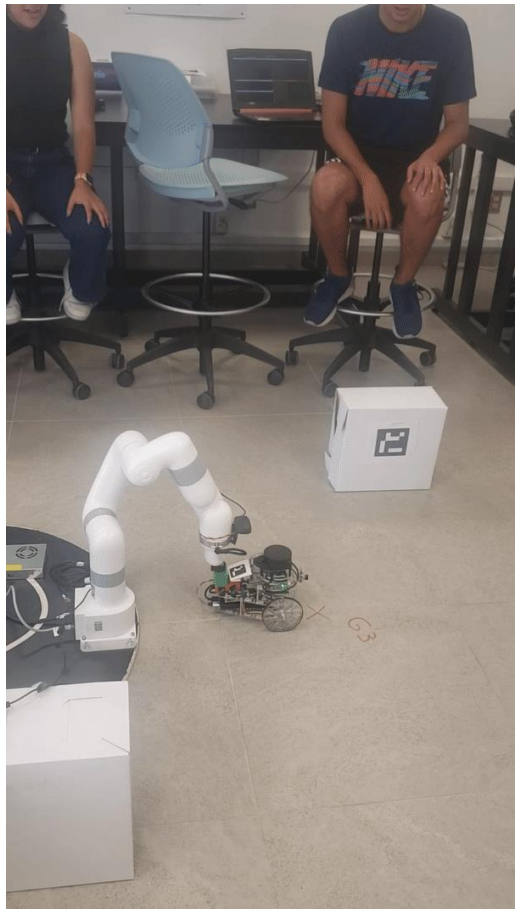
Partnerships: Tec de Monterrey

- Manchester Robotics has stablished partnerships with different educational institutions worldwide.
- In Mexico, we've partnered with Tecnológico de Monterrey for more than 4 years now.
- Different project and courses have been done in different campuses nationwide alongside professors and students from different backgrounds.



Partnerships: Tec de Monterrey

- Papers from education and robotics innovation, have been published in different journals.
- Research is currently being done using MCR2 Tools in the fields of Mechatronics and Robotics.



3D Gaussian Splatting for Emulating Real Environments in Undergraduate Educational Robotics.

Arturo E. Cerón, Jason A. Castaño

Tecnológico de Monterrey

June 2024

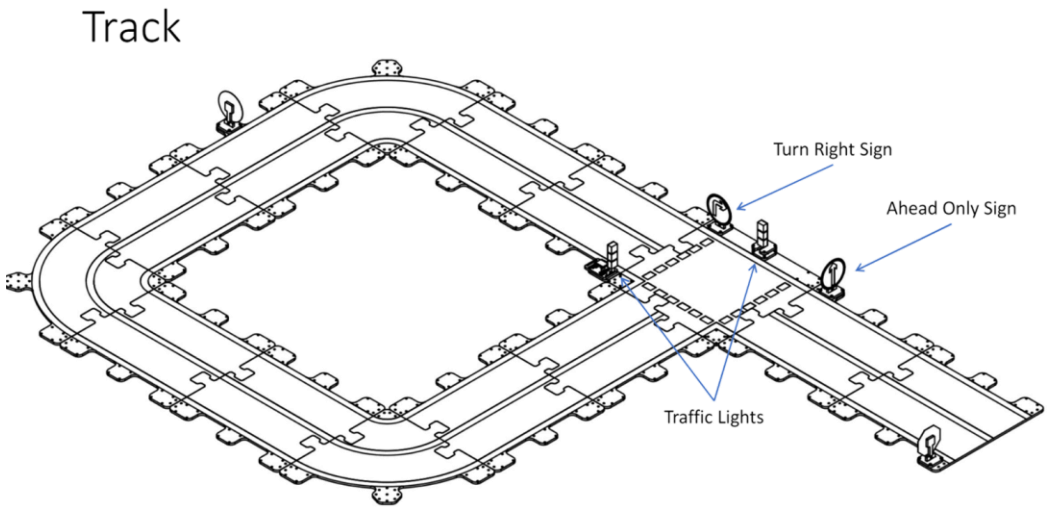
A study on teaching Cyber-Physical Systems with a customized branded mobile robot for Industry 4.0

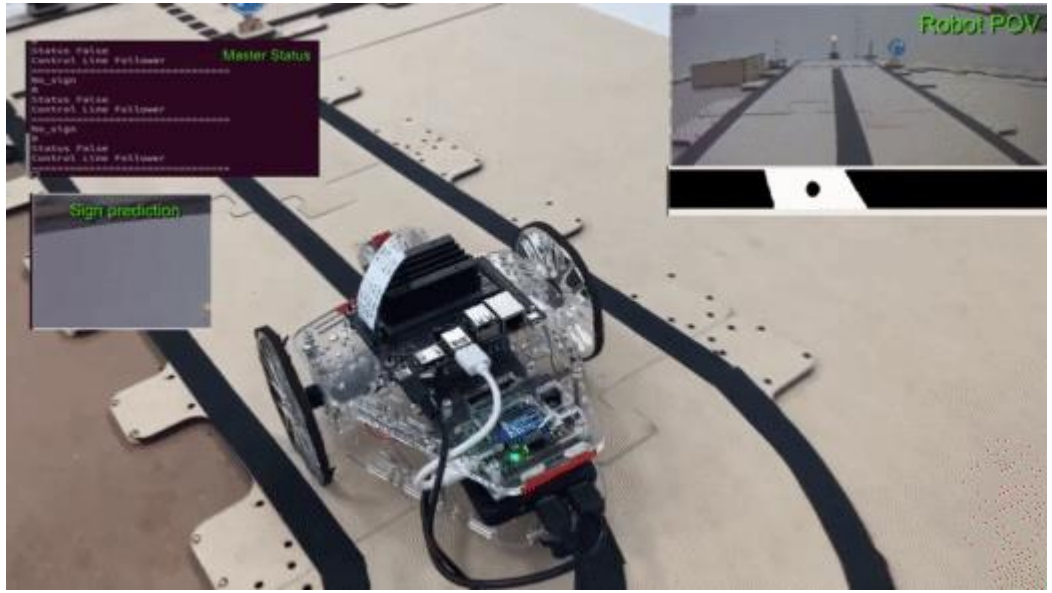
Consuelo Rodriguez-Padilla[1], Mario Martinez Guerrero[2], Alexandru Stancu[3], Karla Yokoyani Chavero Valencia[1], Bernardo Flores Reyes[1], Jeremy Bruce Taylor Valdez[1], Carlos Vazquez Hurtado[1]
[1]Tecnologico de Monterrey, Escuela de Ingenieria y Ciencias, Ave. Eugenio Garza Sada 2501, Monterrey 64849, NL, Mexico
[corodriguez, A01659228, A01029744, A01751664, cvazquezh] @tec.mx
[2]CTO / Co-Founder of Manchester Robotics Ltd., University of Manchester, UK, mario@manchester-robotics.com
[3]Department of Electrical and Electronic Engineering and the Robotics and Autonomous Systems Group Leader at the Aerospace Research Institute, University of Manchester, UK, alexandru.stancu@manchester.ac.uk

Partnerships: Tec de Monterrey

Tec de Monterrey: Nationwide Robotics Challenge

- Consists in autonomously drive the robot on a predefined track provided by MCR2.
- Using the knowledge acquired during the semester, the students were able to implement a neural networks alongside some image recognition algorithms and control theory to drive the robot on the track while obeying the traffic signals.
- The best teams got the chance exhibit their results to their professors, the directors of MCR2, and the engineering directors at NVIDIA.



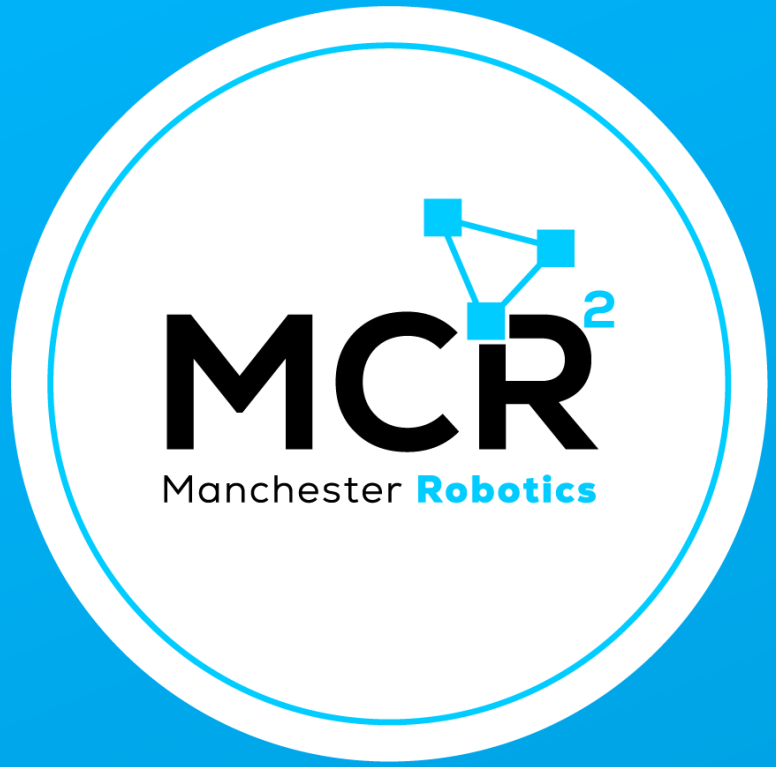


Partnerships: Tec de Monterrey

Tec de Monterrey Automation Challenge

- Making a production line in accordance with MCR2 standards.

- Using the knowledge acquired during the semester, the students were able to implement some image recognition algorithms, manufacturing and control theory to implement the manufacturing line.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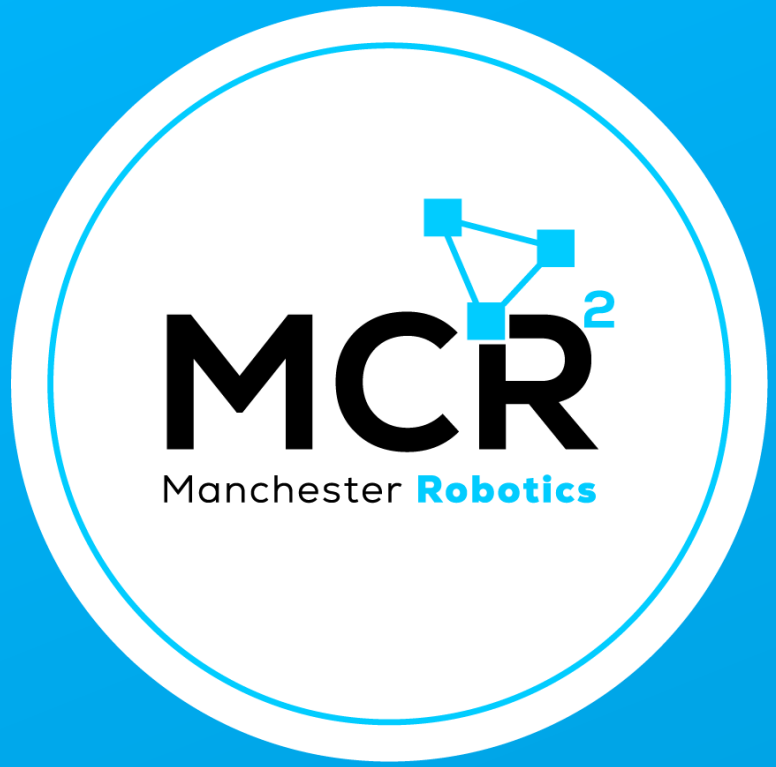
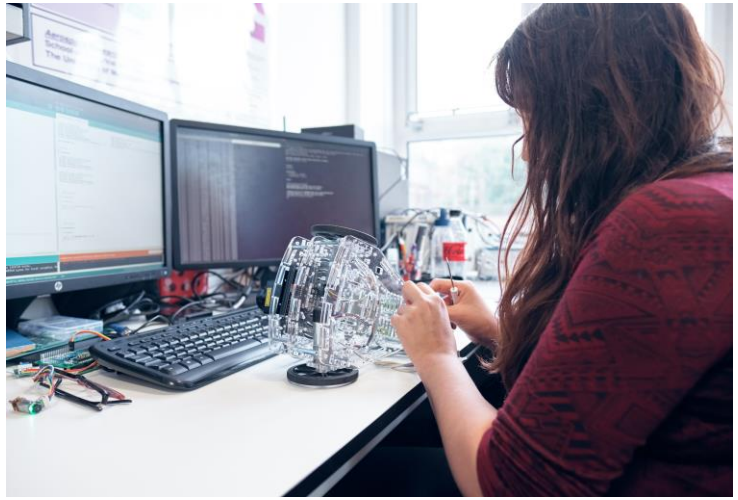
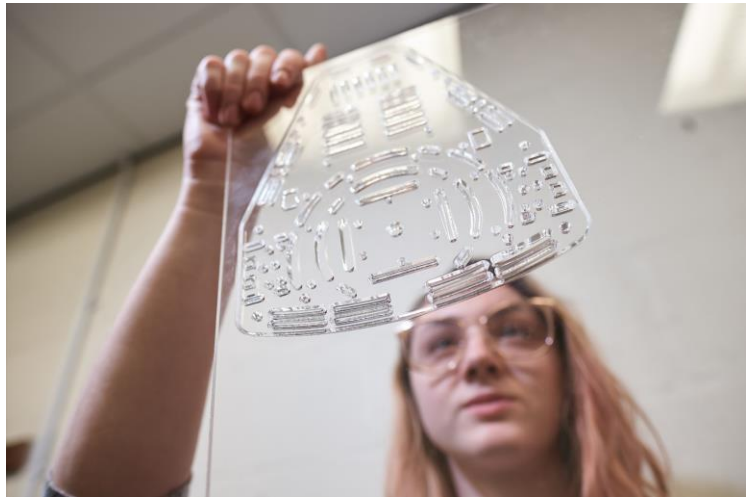


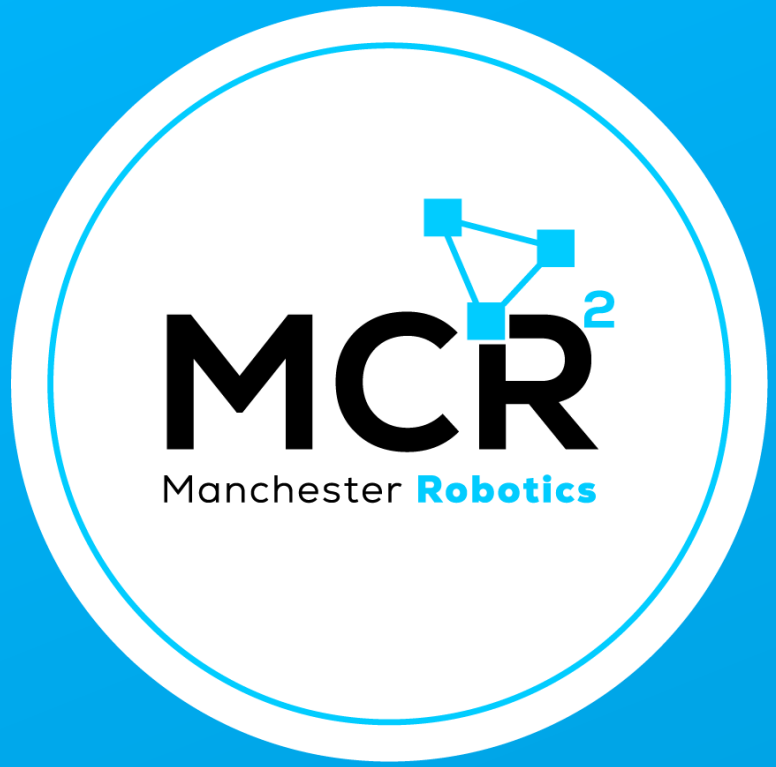
Future Vision

Future Vision

- Expanding to more universities and industries.
- Making Puzzlebot Ecosystem a global standards in education.
- Creating an AI-powered robotics learning assistant.



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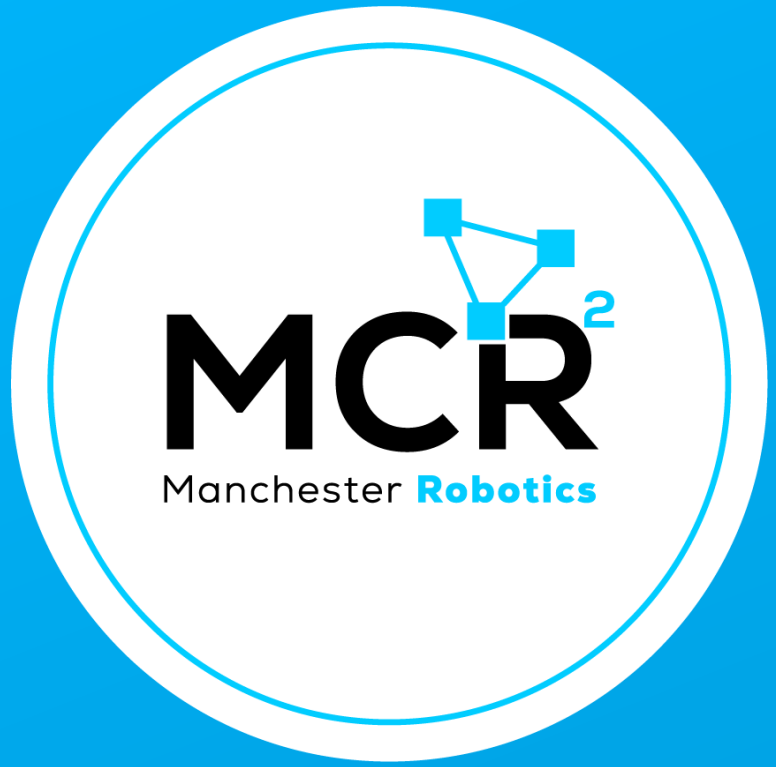
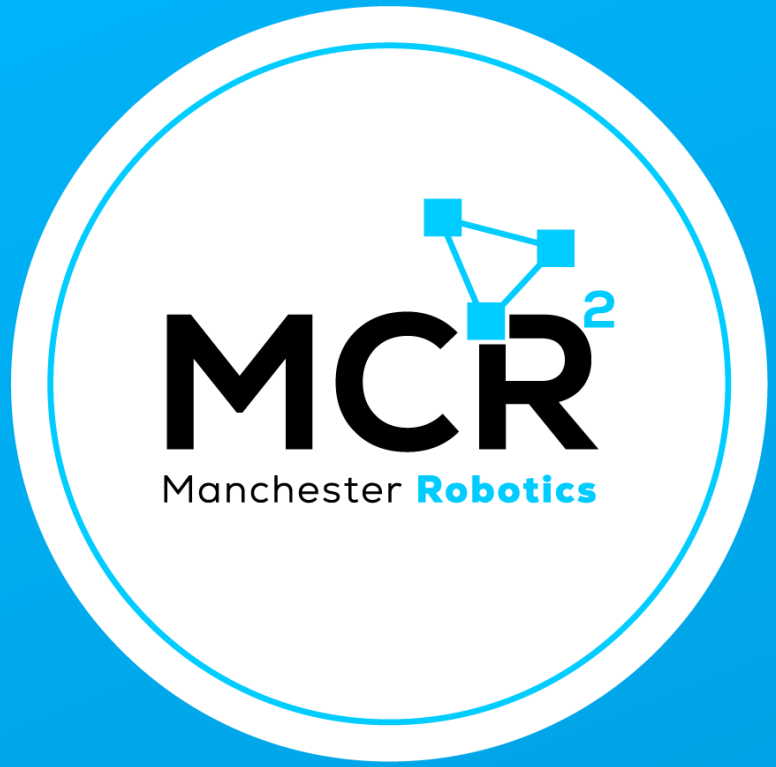


Call to Action

Call to Action

Join the Revolution!

- Students & Educators: Contact us to get involved with Puzzlebot and our robotics programs.
- Researchers & Industry Partners: Collaborate with us to develop new applications.
- Investors & Entrepreneurs: Support the mission to democratize robotics education.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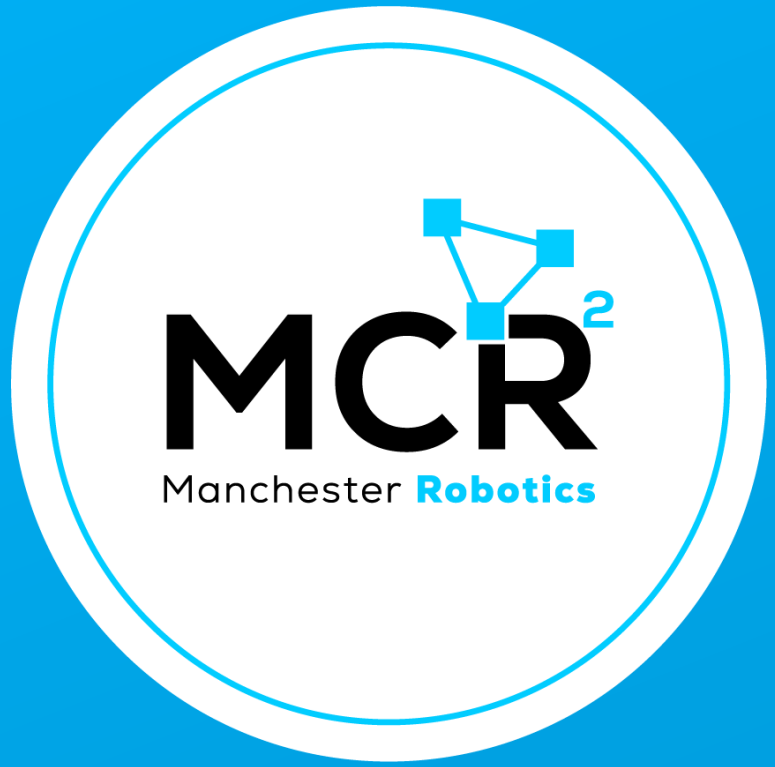
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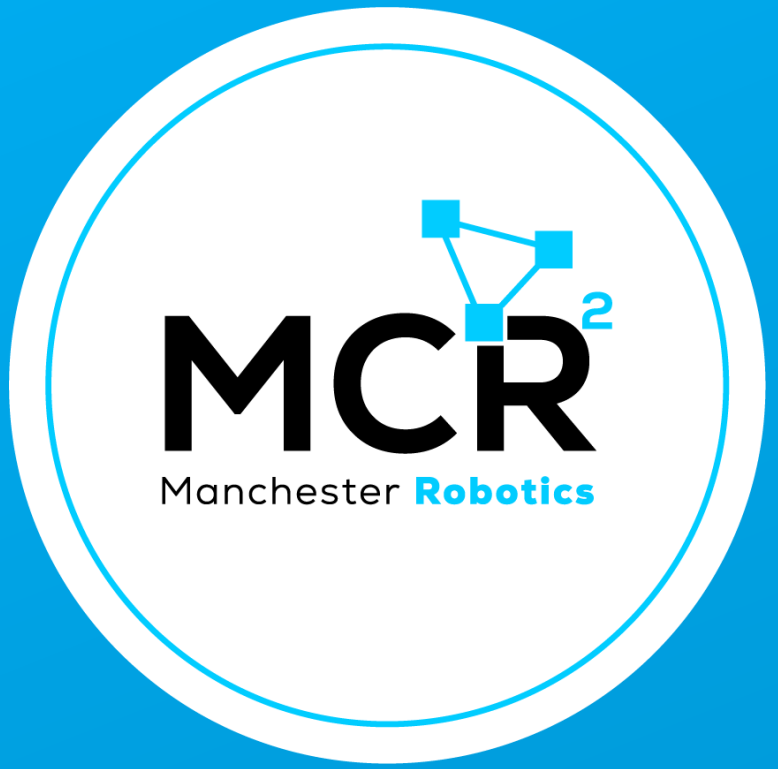
Thank You

Robotics For Everyone



{Learn, Create, Innovate};