Robotics at

Antonio D’Avino
Sofia Vita Sirtori

Supervisor: Eloise Matheson

Index

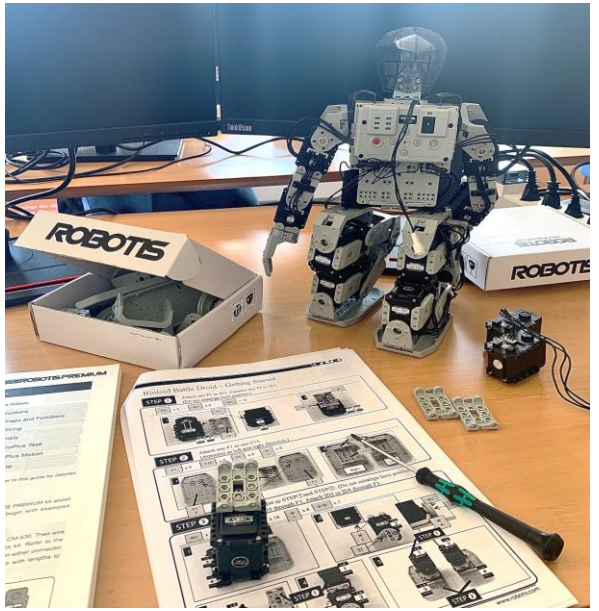
- What is robotics
- What the main projects are
- How the robots are controlled

Index

- **What is robotics**
- What the main projects are
- How the robots are controlled

What is robotics

- It's the synergy between science, engineering and technology.
- Robots undertake complex tasks in harsh and radioactive environments, replacing human involvement.
- Mainly, they carry out maintenance and safe handling of materials.



Index

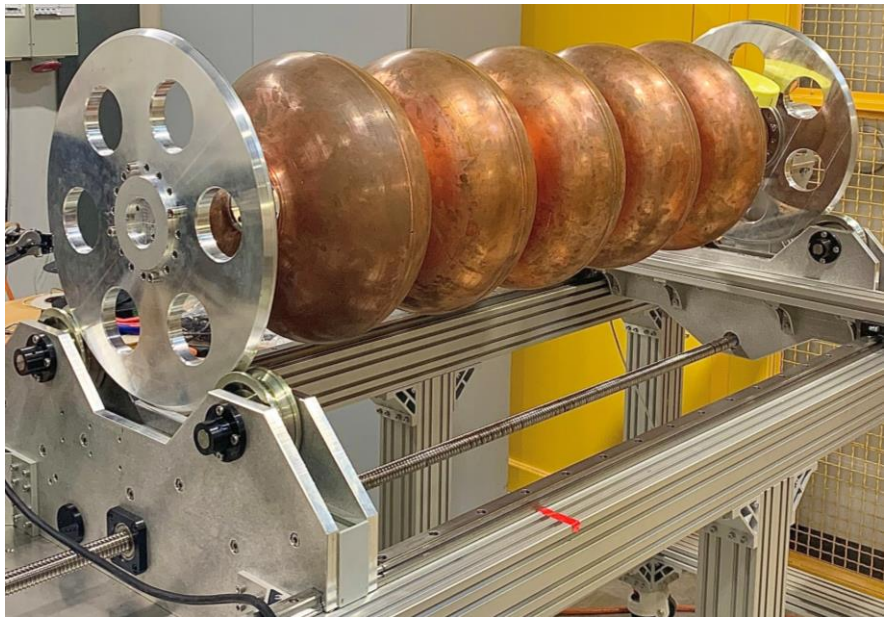
- ~~What is robotics~~
- What the main projects are
- How the robots are controlled

Index

- ~~What is robotics~~
- **What the main projects are**
- How the robots are controlled

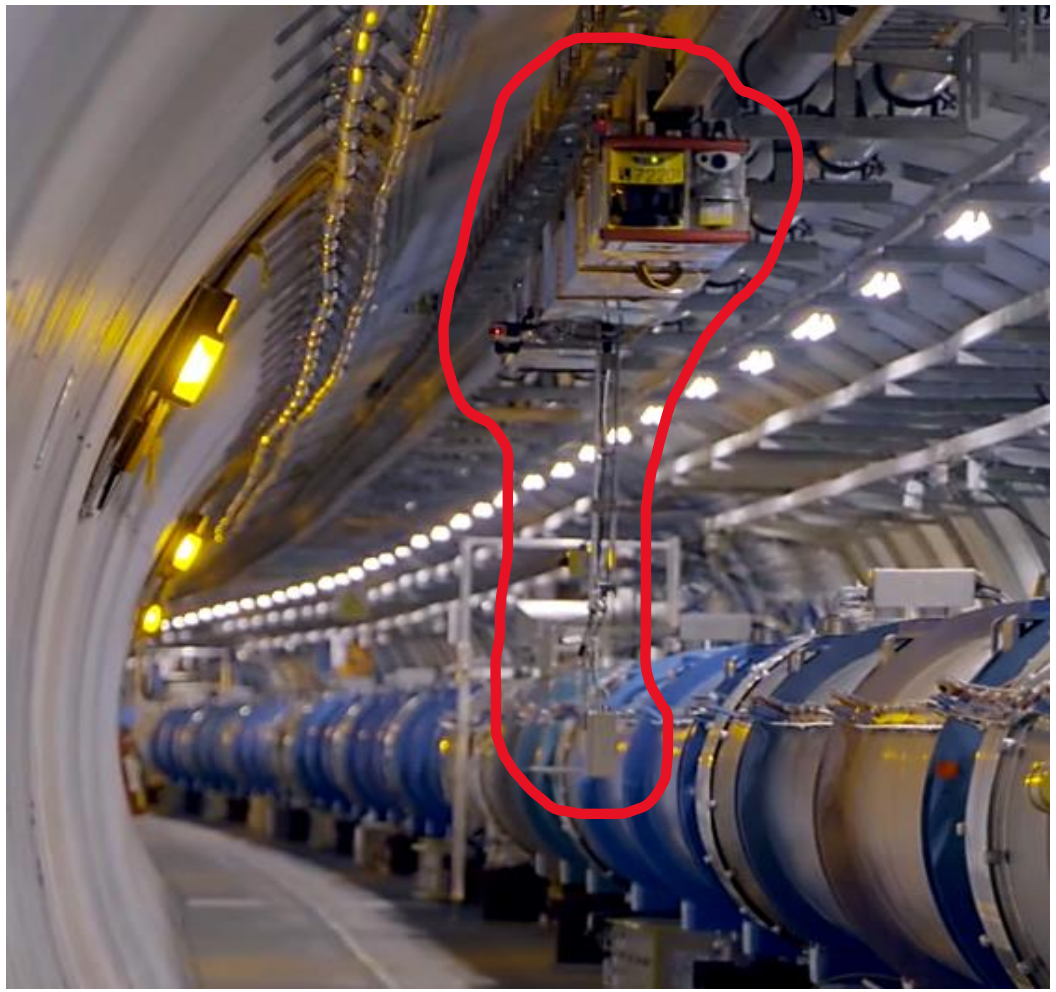
What the main projects are

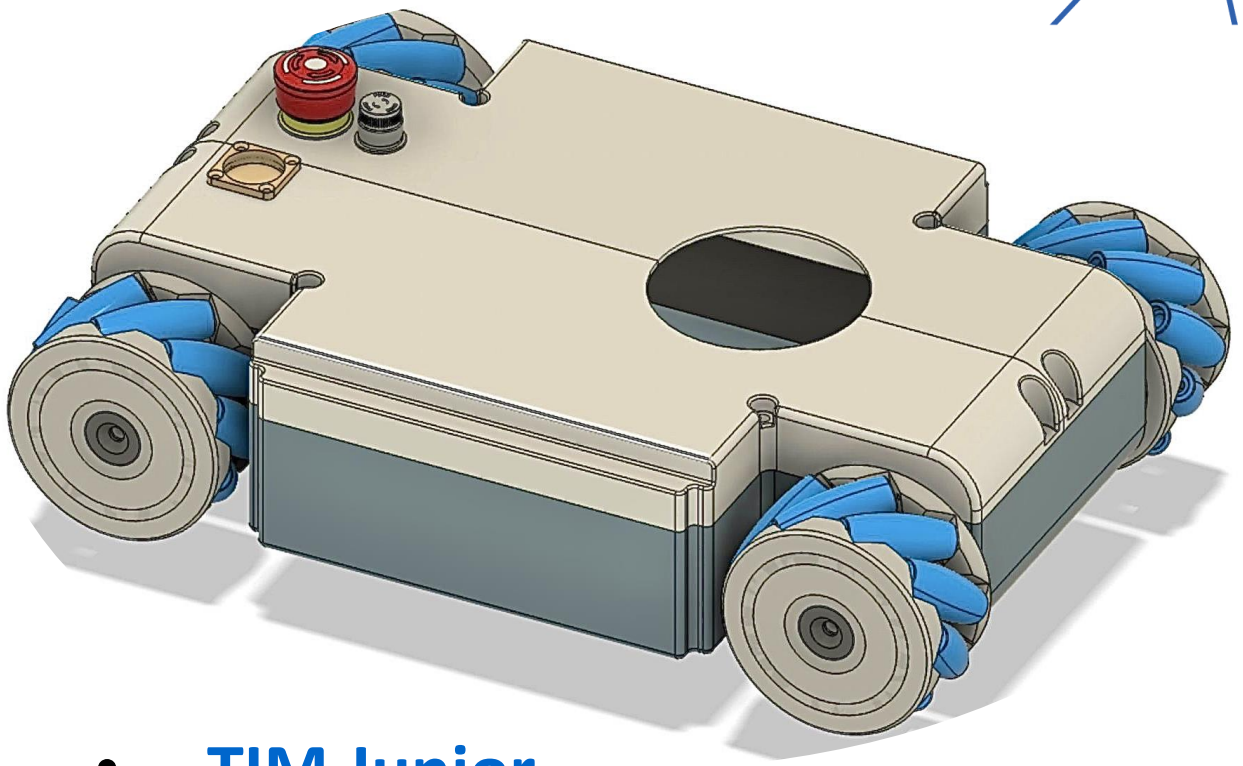
- **KUKA milling robot**, which shapes the workpiece as desired.



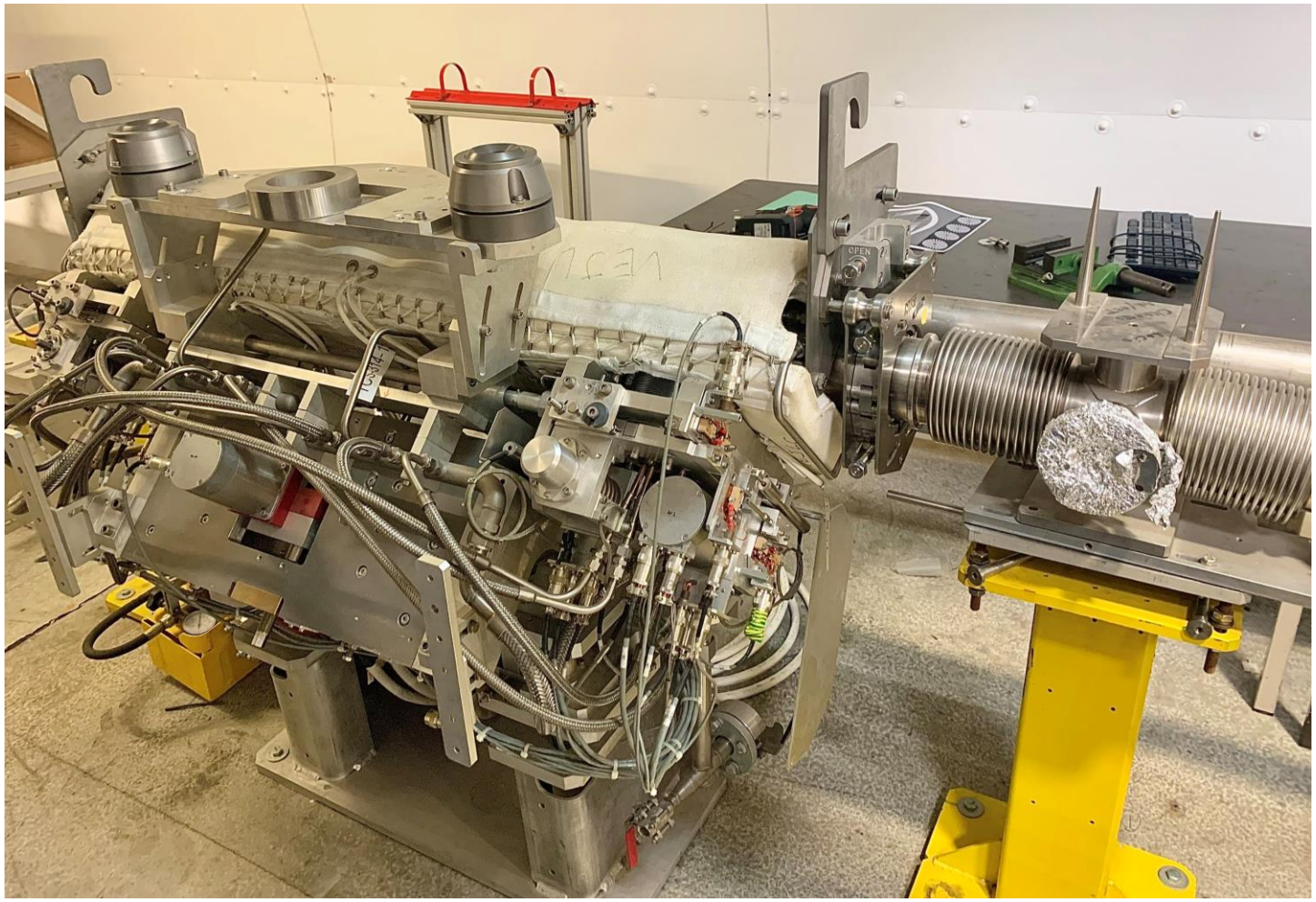
- **Radio Frequency (RF) Cavity**, which accelerates the beams that pass through it.

- **The Train Inspection Monorail (TIM)**, used for real-time monitoring of the LHC tunnel.





- **TIM Junior**



- The **Collimator**, which cleans the particles dispersed around the beam.

Index

- ~~What is robotics~~
- ~~What the main projects are~~
- How the robots are controlled

Index

- ~~What is robotics~~
- ~~What the main projects are~~
- **How the robots are controlled**

How the robots are controlled

- A **GUI** (Graphical User Interface) is a system of interactive visual components: it conveys information and represent actions that can be taken by the user.

- There are two leading methods of GUI:

2D GUI **3D GUI**

2D GUI

- It displays the controls on a normal computer screen and the actions and movement can be controlled directly from the computer's keyboard.

3D GUI

- It requires a pair of headsets for augmented reality, which allow the user to control the virtual and real robot with their own hands, eyes and voice.

- It provides more awareness of the environment than the 2D GUI.

- This touchless system is the basis of the MARCHESE Project: its goal is monitoring, in a contactless way, human parameters, such as the heart rate, breathing and the body temperature.