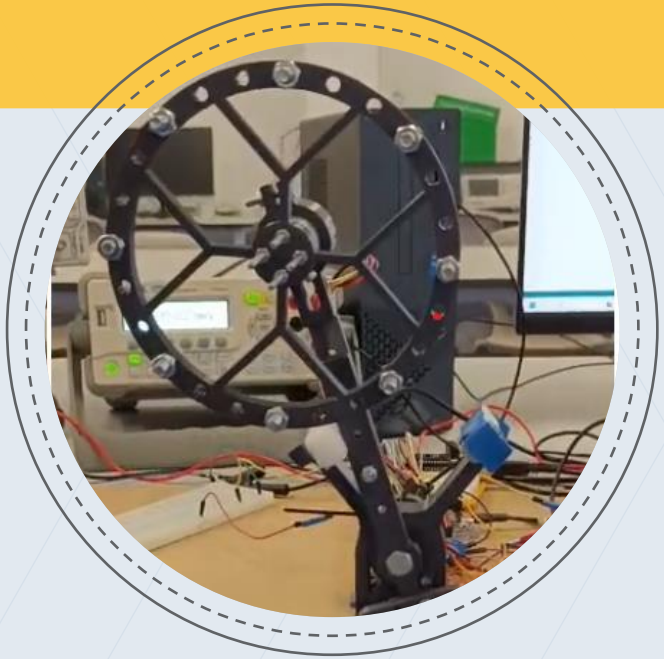
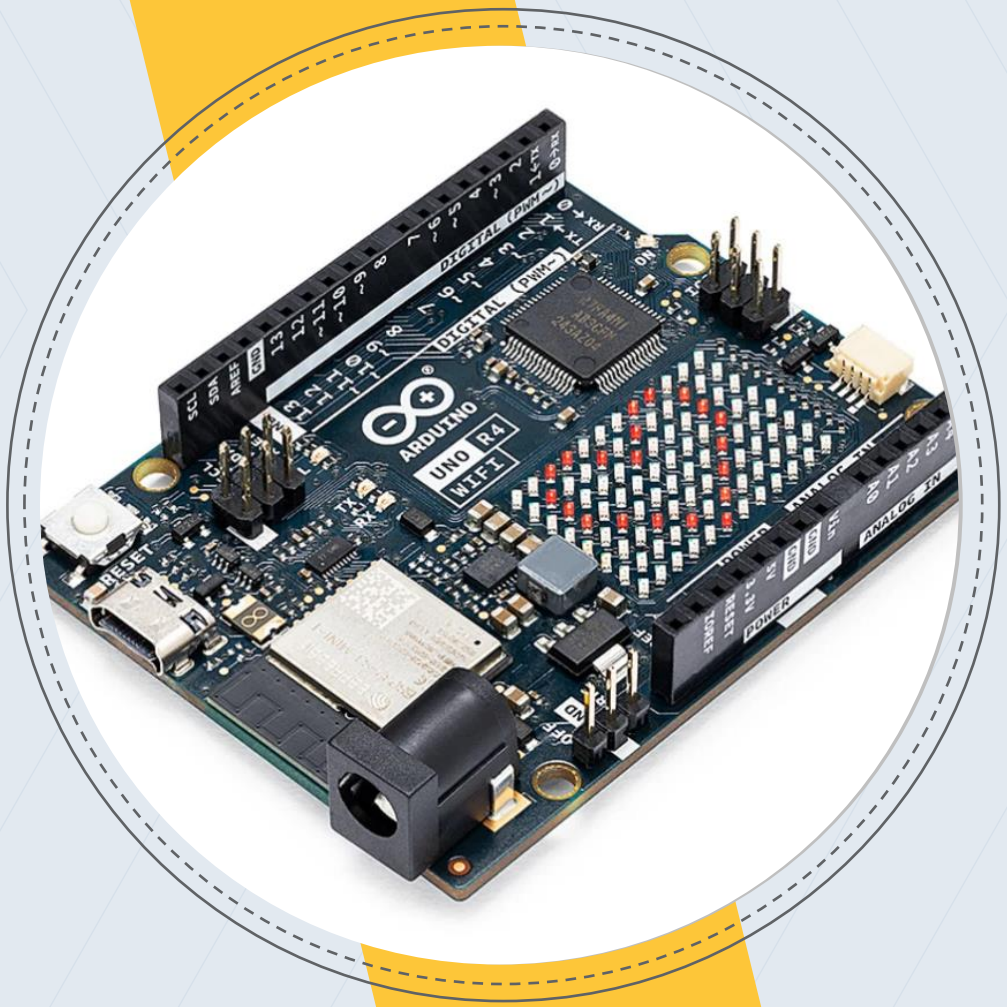


Flywheel Inverted Pendulum (COIL)

Engenharia de Oficinas 3
International Team 4
David Varela
Gabriel Marques
Cisca Wams
Splinter Kohlbrugge
Thijs Ritter

Professors and coordinators: Pedro Patrício, Manfred Niehus, Mark Bosman, Mário Mendes, Francisco Campos

Introduction

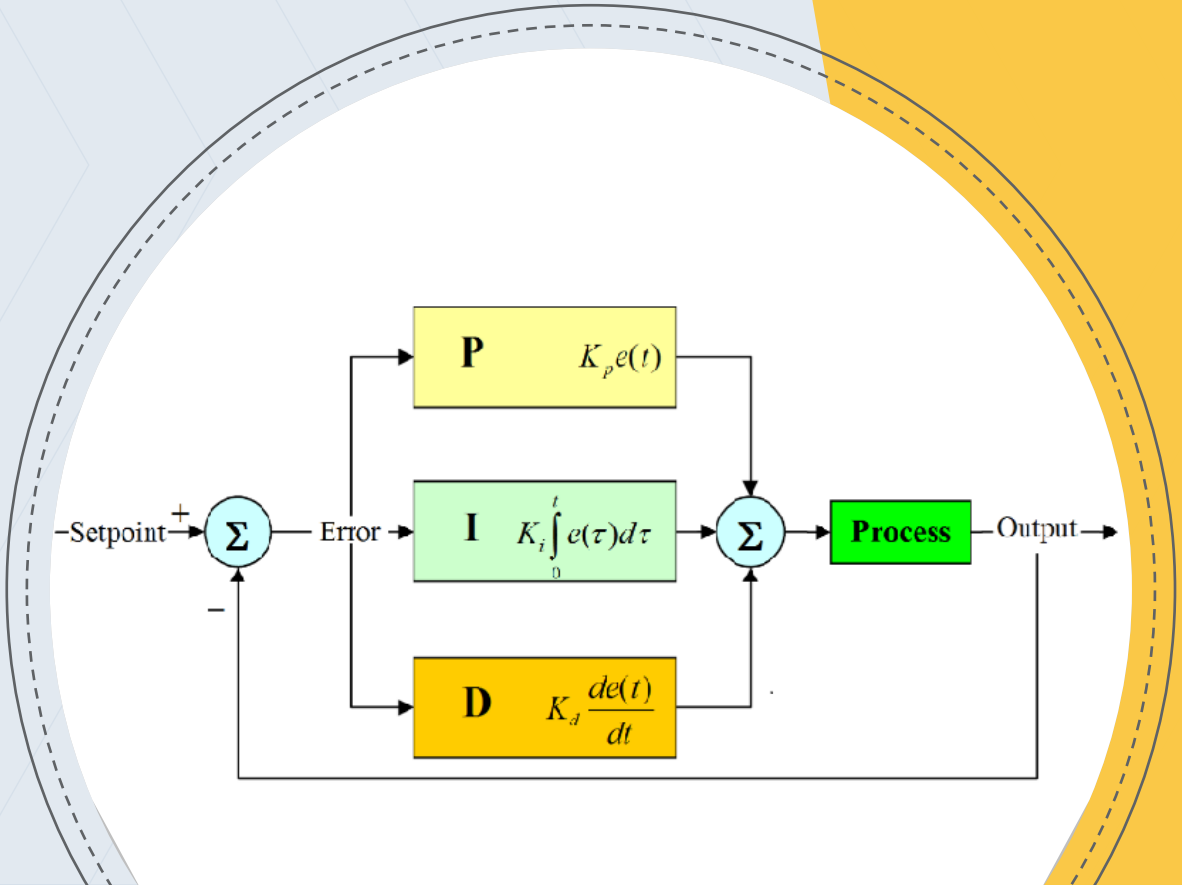


- **Basis of the project**
- **Theoric foundation**
- **Components used and system overview**

Development

- Implementation of code
- Wheel design
- PID control

PID Control



P – Proportional

Provides instant correction in relation to the setpoint

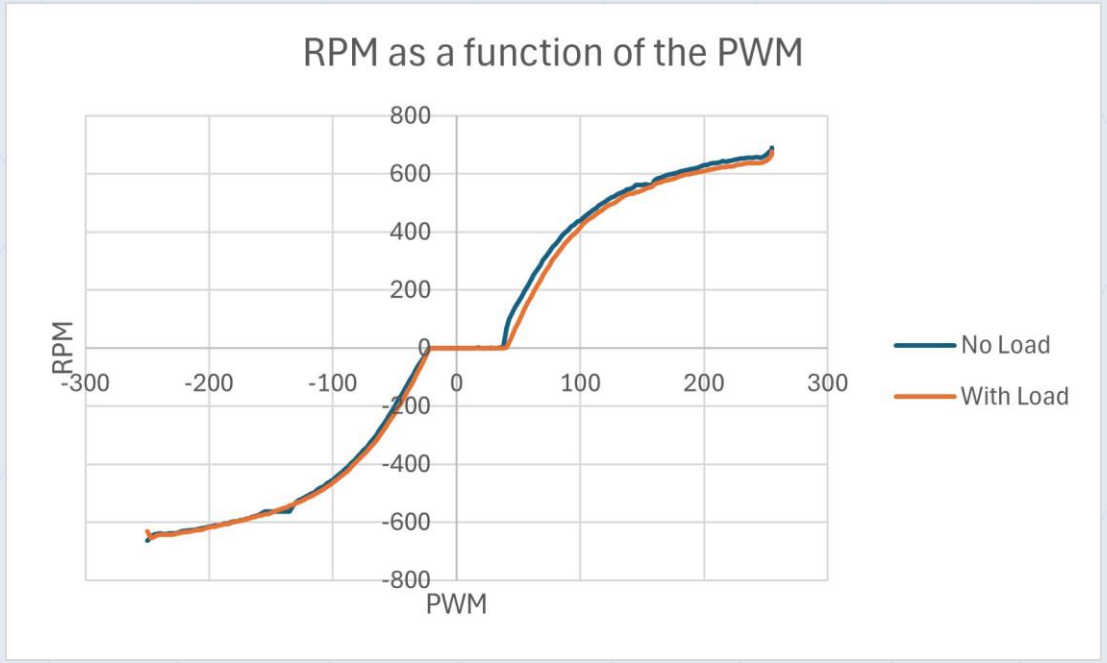
I – Integral

Calculates the sum of past errors over time to eliminate steady-state errors

D – Derivative

Predicts future error by assessing the rate of change of the error

Results



Pendulum results:

Portuguese Team:

- 1
- 2

Dutch Team:

- 1
- 2

Aditional challenges completed

- Starting upside down
- Remove some counterweight
- Improve the wheel design
- Advanced data analysis
- Use bearings