

Master's degree in Automatic Control and Robotics (MUAR)

2024-2025

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sessions

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Master's degree in Automatic Control and Robotics



1. **UPC/ETSEIB introduction**
2. **Master's degree in Automatic Control and Robotics**
3. **Q & A**





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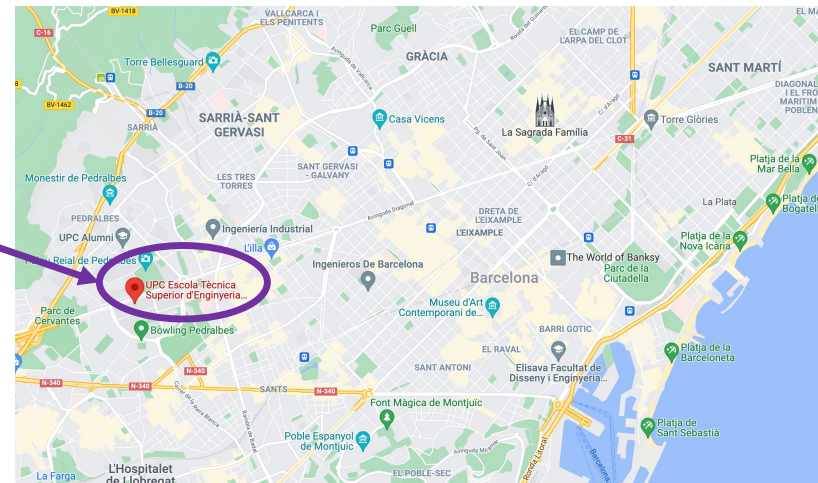
29.812 estudiants 3.523 PDI 2.074 PAS 65 graus 84 màsters 45 programes de doctorat

18 centres docents 275 programes de formació permanent 19 patents el darrer any 348 M pressupost 2023 72,7 M ingressos per R+D+I (2021) 70.151 Alumni



16 Departments
2 Institutes
2 Bachelor degrees (GETI, GETIAE)
15 Master's programs
3379 Students
446 Teaching and Research Staff (PDI)
126 Administrative and Support Staff (PAS)





ETSEIB: Escola Tècnica Superior d'Enginyeria Industrial de Barcelona

Over 170 years of educating professionals with a very strong scientific and technical foundation



<https://etseib.upc.edu/>

ETSEIB Master's degree programmes



1. **Master's degree in Neuroengineering and Rehabilitation (with UAB)**
2. **Master's degree in Biomedical Engineering (with UB)**
3. **Master's degree in Automatic Control and Robotics**
4. **Master's degree in Automotive Engineering**
5. **Master's degree in Management Engineering**
6. **Master in Nuclear Engineering / EMINE**
7. **Master in Electric Power Systems and Drives**
8. **Master in Thermal Engineering / DENSYS**
9. **Master in Energy Engineering / MSc Programmes in Energy InnoEnergy**



ETSEIB Double Degree programmes



Master's degree in Industrial Engineering

+

Master's degree in Automatic Control and Robotics

Master's degree in Automotive Engineering

Master's degree in Management Engineering

Master in Energy Engineering

Master in Nuclear Engineering /EMINE



How to apply



(<https://etseib.upc.edu/en/Academic%20programmes/academic-procedures/acces/application-msc-programmes>)

- **Application**
Deadline: 13th of May 2024
- **Acceptance (Academic Comission)**
June 2024
- **Provisional listing of accepted students**
Before the end of June 2024
- **Students' acceptance**
Up to 7 days from the publication of the listing
- **Definitive listing of accepted students**
Mid-July 2024
- **Enrolment**
Check information at website etseib.upc.edu



How to apply



(<https://etseib.upc.edu/en/Academic%20programmes/academic-procedures/acces/application-msc-programmes>)

How to apply:

Apply UPC Admissions:

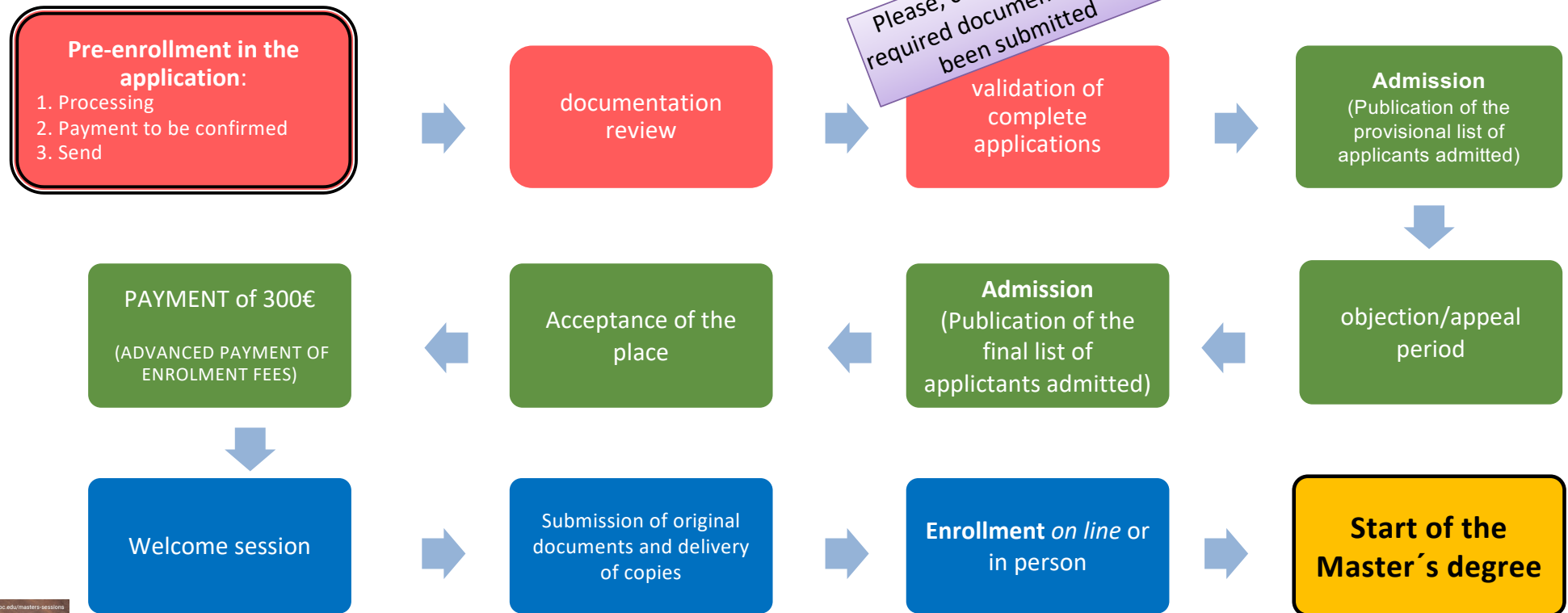
[Application](#)

To validate the request, it is necessary to complete the information for every field:

- Personal data
- Academic details
- Required documentation [Required documents](#)
- Application (*) (choose 3 specialty options for the master required)
- Data protection
- Pre-enrolment fees (General information about UPC" on this [page](#))



Admission and enrollment process



... further information



FAQ's

Check the most frequently asked questions in [this document](#) .

International Relations and Admissions Office

Face-to-face opening office hours:

from Monday to Friday 11 am to 1:30 pm

and Tuesday 3.00 pm to 17.30 pm

Information request: <https://demana.upc.edu/etseib/>

 +34 93 401 59 27



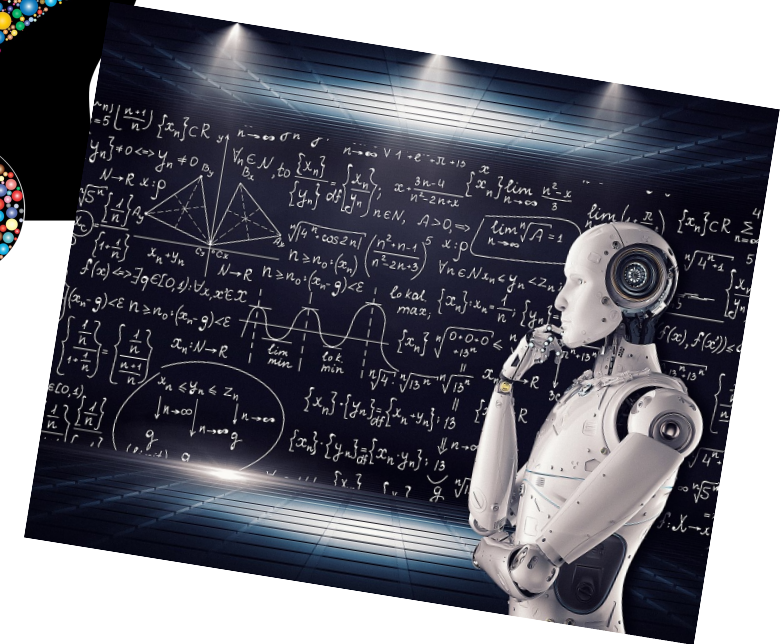


Academic Coordinator: Carlos Ocampo-Martinez



The Grandma's Question

Robotics
Automatic control
Artificial intelligence
(Machine) learning



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MUAR

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The master's degree in Automatic Control and Robotics (MUAR) focuses on engineering in the fields of **automatic control and robotics**. It combines knowledge of industrial engineering, such as electrical and mechanical engineering, industrial electronics, computer science and some aspects of **artificial intelligence**.

- Master's degree in Automatic Control and Robotics + Master's degree in Industrial Engineering (ETSEIB)
- Master's degree in Automatic Control and Robotics (ETSEIB) + Master's degree in Automation and Control Engineering (Politecnico di Milano)



MUAR

- Two academic years, 120 ECTS credits
- Starting September
- About 40 students
- Afternoons
- **English**

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UNIVERSITAT POLITÈCNICA DE CATALUNYA
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Departament d'Enginyeria de Sistemes,
Automàtica i Informàtica Industrial



Departament d'Organització
d'Empreses

UNIVERSITAT POLITÈCNICA DE CATALUNYA

Institut d'Organizacio
i Control de Sistemes
Industrials



Institut de Robòtica
i Informàtica Industrial



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MUAR - Mandatory subjects

**Q1
(autumn)**

Linear
Multivariable
Control Systems

Robotics,
Kinematics,
Dynamics & Control

Modelling, Identification
and Simulation of
Dynamical Systems

Optimization in
Control and
Robotics

Computer Vision

Industrial
Scheduling

**Q2
(spring)**

Nonlinear Control
Systems

Mobile Robots and
Navigation

Pattern
Recognition and
Machine Learning

Business
Administration

**Q3
(autumn)**

Embedded & Real-
time Systems

Planning and
Implementation of
Robotic Systems

Technological
Innovation

Human
Resources
Management

**Q4
(spring)**

Master's Thesis

Elective Block Q4





MUAR - Elective subjects

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Spring (Q2 & Q4)

- Advanced Topics in Computer Vision
- Introduction to ROS
- Model-Based Predictive Control
- Scientific Python for Engineers
- Sensors, Instrumentation and Communications

Autumn (Q3)

- Fault Diagnosis & Supervisory Control
- Human Robot Interaction & Teleoperation
- Medical Robotics
- Hybrid Systems
- Robot Learning
- Robust Control
- Perception and Cognition in Robotic Exploration





MUAR - Elective block Q4

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- **Elective subjects** (up to 18 ECTS)
- **External internships - either local or international** (up to 18 ECTS)
- **Mobility Program - either local or international** (up to 30 ECTS)
- **Professional activities recognition** (up to 18 ECTS)
- **Recognition of credits taken in non-official university courses** (up to 18 ECTS)





MUAR - Curricular internships

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Applus⁺
IDIADA



ABB

SEAT

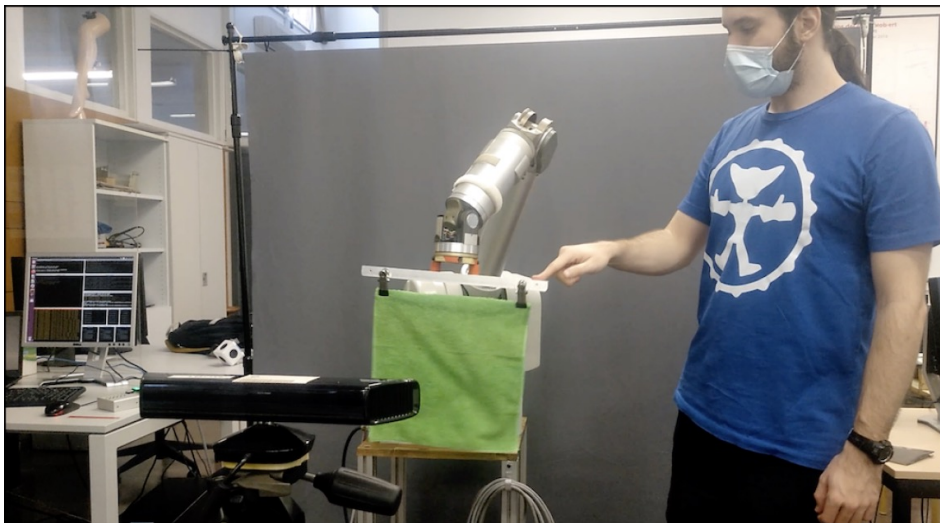
PAL
ROBOTICS

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Master's thesis examples

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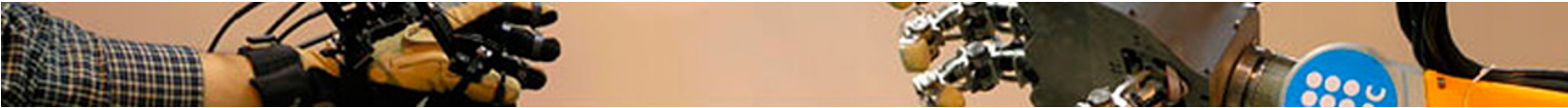


Robotic cloth manipulation

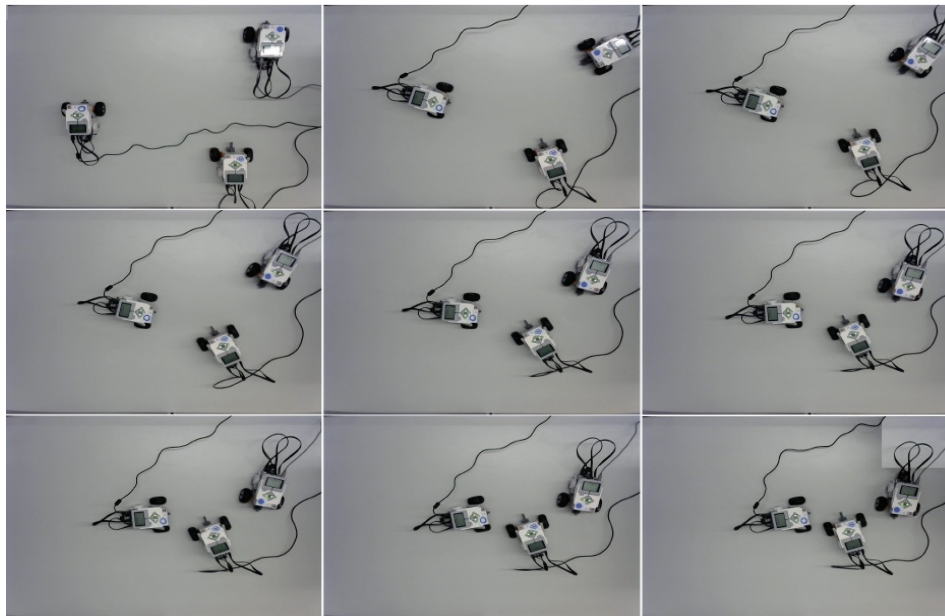


Implementation of a visual servo control in a bi-manual collaborative robot.

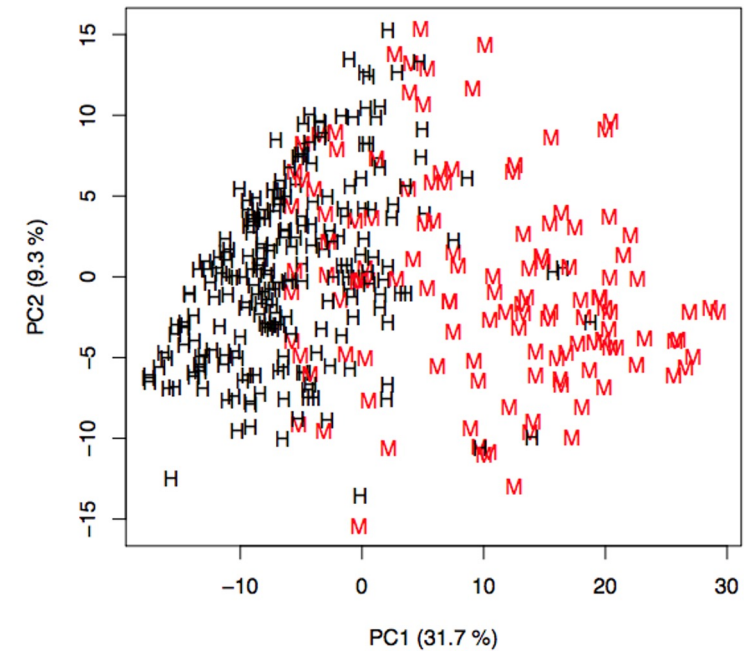




Master's thesis examples



Replicator dynamics alignment sequence with LEGO Mindstorms



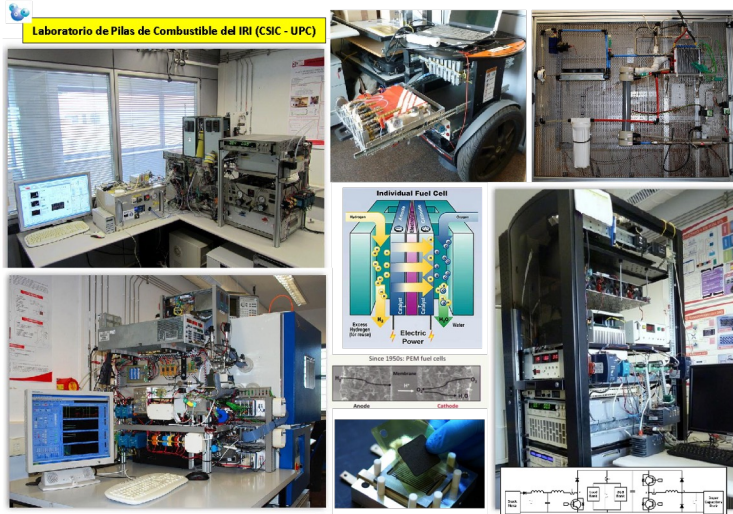
Principal Component Analysis of an image dataset, H/M for Female/Male



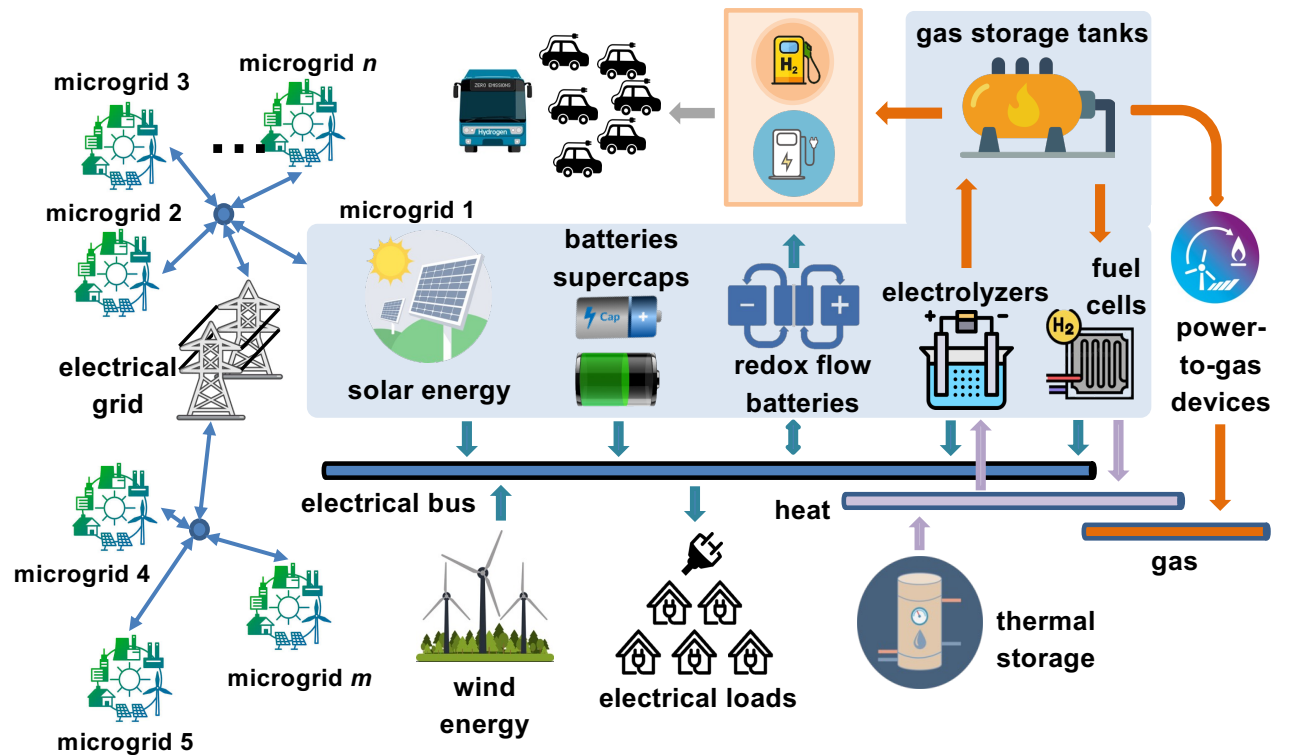
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Energy systems modeling and control

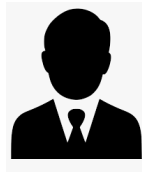


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MUAR's Academic Coordinator

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Prof. Carlos OCAMPO-MARTINEZ



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Formació i recerca
de màxim nivell
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**Thank you for your
attention**

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