Jorge Ortega Camazón

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EDUCATION:

Northeastern University, Boston, MA　　　　　　　　　　　　　　　　　　　　　**May 2026**
Master of Science in Robotics, Concentration: Electrical and Computer Engineering　　　**GPA: 4.0**
Relevant Coursework: Robotics Sensing and Navigation, Control System Engineering, Reinforcement Learning, Robot Mechanics and Control.

Universidad de León, León, Spain　　　　　　　　　　　　　　　　　　　　　　**Jul 2024**
Bachelor of Science in Industrial Electronic and Automation Engineering
Relevant Coursework: Robotic Prototypes, Automatic Control, Technical Drawing I-II, Power Electronics, Digital Electronics, Home Automation.

*Studied abroad during the academic years 2018-2019 and 2022-2023 in USA and Italy respectively.

TECHNICAL SKILLS:

Software: LTspice, MATLAB, EAGLE, Fusion 360, SolidWorks, AutoCAD, ROS, Gazebo, RViz, MS Office Tools
Hardware: Soldering, PCB design, Arduino, ESP32, Analog circuits, Electronic equipment
Programming Languages: Python, C++, MATLAB
Robotics and Automation: SLAM, LiDAR, IMU, GPS
Languages: Spanish (Native), English (Fluent), Italian (Conversational)

PROJECTS:

Stable Walking on Biped Robot using RL　　　　　　　　　　　　　　　　　**Feb – Apr 2025**
- Trained a customized biped robot in the MuJoCo Walker2D-v5 environment using a PPO algorithm based on the Stable Baselines3 library, achieving stable and consistent forward locomotion
- Developed tailored Python code enabling parallel training across 4 environments, integrating TensorBoard for real-time performance tracking and facilitating hyperparameter tuning
- Modified reward functions, torque limits and agent's geometry to encourage realistic motion dynamics, enabling energy-efficient walking and high-speed running behavior across tests

Synchronization and Coordination of Mobile Robots　　　　　　　　　　　　**Nov – Dec 2024**
- Simulated a multi agent robot system for autonomous exploration within a shared environment based on the open-source TurtleBot 3 robot ROS packages
- Developed a realistic simulation environment using Gazebo, spawning three *TurtleBot 3* robots for testing multi-agent exploration
- Modified autonomous navigation algorithms and configured SLAM launch files for each individual robot to enable simultaneous exploration using ROS Noetic
- Configured Rviz for real-time visualization of each robot's exploration process and dynamically merged maps to generate a complete representation of the environment.

Control System Optimization for a Two-Elevator Building　　　　　　　　　　**Nov – Dec 2024**
- Developed and simulated an optimized elevator control system in MATLAB to improve time and energy efficiency in a multiple-elevator building
- Designed and implemented three different elevator controllers for later analysis of system performance
- Utilized parallel computing techniques to enable real-time multi-elevator operation and dynamic request allocation, obtaining realistic request handling and decision-making
- Evaluated control system performances by assessing efficiency metrics such as total travel time, floors traversed and workload balance, achieving a 250% improvement in time and optimal workload balance

Low-Cost, Multifunctional Autonomous Robot　　　　　　　　　　　　　　　**Feb – Jul 2024**
- Designed and built an autonomous robot for indoor mapping with a focus on cost-efficiency
- Engineered the robot's physical structure using durable, lightweight materials, optimizing weight distribution for stable autonomous operation in diverse environments
- Integrated an RPLiDAR A1M8 for real-time mapping and a GPS NEO-M8N for localization, enabling precise navigation with ESP32 microcontrollers
- Developed custom firmware to process and filter data, manage communication between microcontrollers and sensors, and implement motor control and navigation logic.
- Achieved a functional prototype capable of autonomous navigation and mapping with a cost inferior to $300, demonstrating a potential affordable alternative to commercial Autonomous Mobile Robots