# 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 Courses: Robotics Sensing and Navigation, Reinforcement Learning, Robot Mechanics and Control

**Universidad de León,** León, Spain **Jul 2024**

*Bachelor of Science in Industrial Electronic and Automation Engineering*

Relevant Courses: Robotic Prototypes, Automatic Control, Power Electronics, Digital Electronics

*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 & EXPERIENCE:

**Graduate Researcher** **May 2025 – Present**

Silicon Synapse Lab, Northeastern University

- Implemented multi-language (Python/C++/MATLAB) workflows using Pinocchio library to import biped robot URDFs, compute inverse/forward dynamics and kinematics, and visualize inertial properties in Drake
- Disassembled, analyzed and reassembled a series elastic actuator with harmonic drive, identifying friction sources and reducing friction forces by 80%, validated through Elmo Studio performance test

**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
- Modified autonomous navigation algorithms and configured SLAM launch files for 3 individual robots to enable simultaneous multi-agent exploration in customized Gazebo environment 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 three elevator control systems in MATLAB, optimizing multi-elevator operation for time and energy efficiency
- 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**

- Engineered an autonomous robot for indoor mapping with a focus on cost-efficiency using durable, lightweight materials, optimizing weight distribution for stable 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