Research Field And Department	Robotics Systems Engineering and Automation
Supervisor	Ramón Barber
Title of the Work	Environmental modeling through sensory fusion of camera and lidar

Abstract:

Integrating robots into our homes requires that the robot acquire accurate, real-time models of the environment it will navigate and the objects it will interact with or manipulate. To do this, it must use sensors such as LiDAR and cameras, creating a precise model of the environment by combining the information from both sensors in a coherent and robust manner.

The objective of this work is to obtain images from these two types of sensors and fuse them to create an environmental model useful for performing navigation tasks.

Main Tasks to Carry Out:

- Obtain images of the environment using various sensors such as lidar and RGB cameras.
- Apply sine fusion techniques to obtain models of the environment.
- Compare the obtained models with the real world to evaluate the consistency and robustness of the models..

References/Bibliography if required

- A. Mora, R. Barber; S. Garrido; L. Moreno. Bridging Perception and User Needs: Semantic Mapping with Grounded Interpretation using a Dual-Embeddings Approach. 2025 European Conference on Mobile Robots (ECMR). Padua, Italy. Sept. 2025.