

Postdoctoral Researcher Opportunity at the Universitat de Girona LLM-Based Mission Planning and Autonomous Decision-Making for Underwater Robots

This postdoctoral research will focus on the development of an intelligent architecture based on Large Language Models (LLMs) and foundation models to support mission planning, execution, monitoring, and replanning in autonomous underwater robots operating in dynamic and uncertain environments.

The proposed system will integrate signal-to-symbol information derived from multimodal sensory data, the robot's state and capabilities, and mission specifications to generate robust task plans. The architecture will combine LLM-based reasoning with external planning tools, enabling adaptive decision-making and autonomous mission execution under real-world underwater constraints, including uncertainty, partial observability, and changing environmental conditions.

Key research aspects include:

- Development of an LLM-based architecture for autonomous mission planning and execution.
- Integration of multimodal perception, robot capabilities, and mission objectives into symbolic representations.
- Execution monitoring, anomaly detection, and autonomous replanning in response to unexpected events.
- Validation in simulation and on a real Autonomous Underwater Vehicle (AUV), with applications to ecological monitoring and restoration scenarios.

Requirements

Applicants must have:

- A PhD in Robotics, Artificial Intelligence, Computer Science, or a related field.
- Strong programming skills in Python and C++.
- Proven experience in Artificial Intelligence and machine learning.
- Fluency in English, both written and spoken.

Highly valued:

- Experience with Large Language Models (LLMs), foundation models, or AI agents.
- Experience with AI planning, task planning, or symbolic reasoning.
- Experience with robotics software frameworks such as ROS2.
- Familiarity with robotic simulators (e.g., Gazebo, Isaac Sim, or MuJoCo).
- Experience with autonomous robots or underwater robotics.

Conditions

- Full-time contract (37.5 h/week).
- Duration: 2 years (renewed annually).
- Annually gross salary: 39.375€ according to UdG regulations.
- Workplace: On-site at the CIRS facilities in Girona (Spain).
- Expected starting date: 1 November 2026.

Application

Candidates must apply by completing the application form (([LINK](#)), and submitting the required documentation before **27 July 2026**.

The selection process will include an online interview.