Open PhD Position

Integrated 6G Localization, Sensing, Communications and Control

Program: PhD in Electrical, Electronic, and Information Engineering (ETIT), University of Bologna (UNIBO, Italy), https://phd.unibo.it/etit/en

Supervisors: Prof. Anna Guerra, Dr. Francesco Guidi

Project Context: The selected candidate will join the **ERC Starting Grant project "CUE GO – Contextual Radio Cues for Enhancing Decision-Making in Networks of Autonomous Agents"**, which aims to develop a new methodological framework to improve decision-making in autonomous systems. The project combines high-frequency radio sensing and localization, semantic environmental mapping, and intelligent agent coordination. The goal is to enable autonomous agents to extract contextual radio features/cues from electromagnetic representations of their environment. These features carry semantic meaning relevant to the agents' mission and can accelerate decision-making, enhance ambient awareness, and enable prediction of action outcomes.

Expected Work: The selected candidate will conduct research at the intersection of wireless communications, signal processing, and control theory, aiming to develop cutting-edge algorithms for joint localization, communication, and control. The work will account for the deployment of emerging technologies, including extremely large antenna arrays and leaky-wave antennas, on mobile autonomous agents.
Possible activities will include:

- Design of integrated communication, sensing, and control strategies for next-generation 6G systems;
- Development of high-accuracy localization and radio mapping techniques;
- Distributed multi-agent sensing and cooperative positioning algorithms;
- Machine learning and data-driven methods for ambient awareness.

Working Environment: The PhD will be conducted at the University of Bologna (Bologna, Italy) in collaboration with the National Reserach Council of Italy (CNR-IEIIT, Bologna, Italy).

Candidate Profile: We are looking for motivated candidates with the following background:

- MSc (or equivalent) in Electrical Engineering, Telecommunications, Computer Science, Robotics, or related fields
- Solid background in signal processing, wireless systems, applied mathematics, and/or control theory
- Knowledge of machine learning or optimization methods is a plus
- Proficiency in programming (Python, Matlab, C++, or similar)
- Strong interest in cutting-edge research on 6G and autonomous systems

Salary: Standard Italian PhD scholarship.

Application Window: May 30 – June 30, 2026

Application Website: https://www.unibo.it/en/study/phd-professional-masters-specialisation-schools-and-other-programmes/phd/phd-programme

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This is a call for expressions of interest. The formal selection process will be carried out by a selection committee at the University of Bologna.