

THESIS PROPOSAL

- **Title:** Design and development of an UWB-based indoor localization system for UAVs.
- **Context:** The forthcoming industrial environments will require a high level of automation to be flexible and adaptive enough to comply with the increasingly faster and low-cost market demands. Autonomous and collaborative robots will have an ever-greater role in this context. In this view, the FIXIT project aims at enabling a drone to flight in indoor environments with a precise locating system within an industrial or logistic environment towards the Industry 4.0. The thesis will be part of a bigger project in collaboration with other students and simulating a realistic working environment.
- **Place:** Competence Industry Manufacturing 4.0 ([CIM4.0](#)) – Corso Luigi Settembrini 178.
- **Description:** The main activities are the following:
 - Research about radio-based indoor localization systems.
 - Design and simulation of an indoor localization system.
 - Design and development of a Bayesian-based localization algorithm.
 - Implementation of a localization system.
 - Development of an UWB-based GW.
 - Development of a Graphical User Interface (GUI) to monitor the locating system.
 - Implementation of an interface with a drone system and integration.
- **Requirements:**
 - **Mandatory:**
 - **Simulation:** Matlab or similar
 - **Programming:** C/C++, Python
 - **Preferable:**
 - Knowledge about Inertial Sensors
 - Knowledge about Satellite navigation
 - Knowledge about Bayesian-based algorithms (EKF, Particle Filter)
 - Knowledge about serial communication protocols
 - Knowledge about Internet of Things systems

Contacts:

Send an email with your motivation letter, CV and transcript (list of your marks at Politecnico) to

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