

Thesis Proposals

ISP - STIIMA CNR

The ISP group is part of the Institute of Intelligent Industrial Technologies and Systems for Advanced Manufacturing (STIIMA) of the National Research Council of Italy (CNR) in Bari.

We develop methodologies and technologies for designing intelligent sensing and perception systems endowed with Intelligent abilities.

We aim at improving the quality of life in any physical environment: industries, competitive farms, modern societies, smart infrastructures, etc.

For more details, you can visit the [ISP web site](#).

<i>Title</i>	Study and development of localization and navigation algorithms for ground mobile robots in harsh outdoor environments
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<i>Keywords</i>	Robot localization Sensor fusion Kalman filters
<i>Activity duration</i>	6 months
<i>Required skills</i>	MATLAB/Simulink knowledge C++/Python knowledge Basics of ROS (Robot Operating System) is a plus Signal Processing Automatic Control Systems Systems Theory
<i>Training objectives</i>	The activity aims to train new professionals in the areas of signal processing and mobile robotics with application to different sectors ranging from precision farming to Industry 4.0.
<i>Abstract</i>	The activity involves the study of innovative data fusion techniques devoted to the estimation of the position of a ground mobile robot. The localization strategy will be based on measurements obtained from heterogeneous sensors mounted on the platform. Specifically, the activity will consist in the development of a filter (kalman filter, particle filter, ...) for the fusion of data coming from different sensors. The goal is to create a modular estimation framework that can be easily customized based on the sensor suite available on board the robot. Part of the activities can be carried out in collaboration with Italian and/or foreign research institutions in the context of specific research projects. Moreover, during the 2020, several acquisition campaigns are scheduled to be done in Turin. The research activity can be partially carried out remotely.