

PhD Topic Proposal

Title: Conceptualization of objects and scenes based on RGB-D information for intelligent robots

Keywords: Object recognition; scene recognition; open-ended learning; RGB-D perception; robotics

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Research unit: IEETA/UA

Context

In the framework of RACE (“Robustness by Autonomous Competence Enhancement”), an ongoing project funded by EU FP7, IEETA is currently collaborating on the development of an artificial cognitive system able to build a high-level understanding of the world it inhabits by storing and exploiting appropriate memories of its experiences. The project developments will be integrated and demonstrated on a PR2 robot, from Willow Garage. The University of Aveiro is involved in the development of modules concerned with semantic interpretation, recording and conceptualization of experiences of plan-based activities, and human-robot interaction.

Objectives

This scholarship is focused on the design and development of mechanisms for conceptualization of objects and scenes in service robotics applications, such that robot performance on object and scene recognition improves with accumulated experiences and conceptualizations. There is a focus on 3D environment perception and open-ended learning, as well as on human-robot interaction for naming objects and scenes and for providing corrective feedback.