Preparing a Robot for the Robocup@home Competition  
*Project proposal*  
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## 1 Goals

Robotics is currently one of the areas with greater growth potential inside Artificial Intelligence, given its many applications and the current state-of-the-art that allows for many tasks that were recently seen as possible to be completed by humans only, to be done by robots.

The *robocup@home* competition aims to develop robots to assist in personal domestic situations. It requires the robots to have many capabilities, such as, human-robot-interaction and cooperation, navigation and mapping in dynamic environments, computer vision and object recognition, object manipulation, among others [1].

At SOCIA-lab we have been working on some of the code to allow a robot to solve several of the problems that arise in this competition (mapping, grasping, voice recognition, among others) [2] [3] [4].

With this project we want to integrate all the developed code into a single framework such that it is able to work together as a whole, and also to develop and/or install code to solve other tasks, such as face recognition.

![Robot](image)

The code will be done on the Robot Operating System (ROS) [5] in Python and will run on a Turtlebot 2 robot.

## 2 Work plan

The project has the following tasks:
T1 Introduction to robotics and ROS (3 weeks).

T2 Study the requirements for the robocup@home competition and integrate already existing code (2 weeks).

T3 Implement new code to solve some of the remaining necessary requirements (9 weeks).

T4 Write the project's report (3 weeks).

3 Technical and Academic Requirements

Be able to program using Python on Linux, use a source code repository and produce documentation (using doxygen or other similar tool).

It is desirable that the student has grades above 13 on the following courses: Estruturas de Dados, Probabilidades e Estatística, Inteligência Artificial.

4 Expected Results

- robot prepared to solve most of the robocup@home tasks
- source code and documentation of all code developed
- project report

5 References


6 Contact

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