



ROBINT: Integration of Intelligent Behaviours in Tour-Guide Robots

Data ...

Keywords:	Autonomous Systems Interactive Robots Reactive Navigation Sensor Fusion Perception Web Interfaces Speech Technology
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Goal ...

The goal of the project is the modelling, methodology of design, development and implementation of intelligent behaviours in tour-guide robots.

Gallery ...

The image shows URBANO robot guiding a tour inside Science Museum "Príncipe Felipe" of Valencia.





Description ...

Interactive robots are machines that must be programmed to fluently dialogue with humans, as well as to navigate, reason, learn and survive in human-like environments. In order to achieve this goal, robots must be conscious of their mental state, and their knowledge about the surrounding environment must be adequately combined with the information they receive through their perception system. This kind of robots are suitable for operating in human environments, carrying out useful and social tasks in which they become teaching robots (in museums and schools), entertainment robots (in leisure parks), or companion robots (at home and hospitals).

Several prototypes of interactive robots have already been developed but they do not use cognitive structures. This new project is the continuation of the researches developed in two previous projects: URBANO (CICYT 2002-2004) and WEBFAIR (IST 29456), in which a tour-guide robot for fairs and museums was developed, but with a rigid behaviour defined by means of fixed rules. The goal is to add social behaviours needed to adequately interact with humans in the development of its assigned tasks.

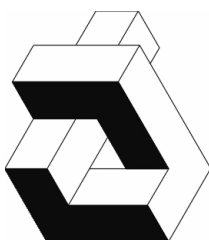
Implementation ...

The objectives of the project, sorted by research lines, are:

- Navigation: enhance the localization method and simultaneous modelling (SLAM), adaptation of the algorithm to geometric objects that aren't segment, fusion of probabilistic estimations with possibilistic information from a qualitative navigator based in fuzzy logic, and sensorial fusion to extend the 2D to 3D navigation.
- Conscience and Emotions: development of conscience models, design of a methodology of work and the implementation. Emotional models generation robot's as a reaction to input events
- Knowledge: Modelling of the knowledge that the robot use to "work" (show, teach, explain) and its relations; Modelling the necessary "social" knowledge to interact with its environment.
- Dialogue: to enhance the voice synthesis to include emotions; continuous speech recognition and natural language processing to get a semantic understanding of the dialogue.

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