
Fun Robotic Outdoor Guide (FROG)

Resumen:

FROG proposes to develop a guide robot with a winning personality and behaviors that will engage tourists in a fun exploration of outdoor attractions. The work encompasses innovation in the areas of vision-based detection, robotics design and navigation, human-robot interaction, affective computing, intelligent agent architecture and dependable autonomous outdoor robot operation.

The FROG robots' fun personality and social visitor-guide behaviors aim to enhance the user experience.

Objetivos:

The project aims to develop an autonomous robot that can interact with people in dynamic real-world outdoor environments and facilitates co-operation across organizational and disciplinary boundaries. The resulting robot platform will contribute to Robotic systems operating in real-world environments and support expansion and improving the functionalities of robotic systems and further developing relevant features, such as autonomy, safety, robustness, efficiency, and ease of use. Besides, exploring ways of integrating, in robotic systems, new materials and advanced sensor, actuator, effector and leading edge memory and control technologies will be taking into account.

Objetivos contribución:

The UPO group will develop many different tasks on the project:

- By developing high-level navigation algorithms to implement a low-level, microcontroller based, safety layer of robot control during the robot specification, design and construction phase.
- It will be in charge of the WP3, which it has been set to provide a precise-enough six degree-of-freedom localization for navigation and augmented reality purposes.
- For the development of a human-aware robust, safe and efficient navigation in crowded scenarios, the UPO group will deal with higher levels in the navigation stack of the FROG robot.
- It will deal with the integration of the localization component and the AR application for the Multimodal Interaction with location-based content.
- It is the responsible for the development of person guidance techniques. The main objective is to develop control algorithms that also take into account human commitment when moving to the destinations.

Entregables:

- Robot 6DOF precise localization component: The localization module required for robot navigation and the augmented reality components.
- Path planning and execution component for efficient and human-aware navigation.
- FROG robot localization, mapping and navigation.
- Specifications of AR application requisites for robot design.
- Sensor data and Multimedia database with the virtual content for AR application: Multimedia data on a limited set of POI for the Villa do Rabaçal.
- AR Robot Application component.
- Person guidance navigation component.
- Benchmarking Report on robotics platforms.
- Scientific Publications.

- Related Project Workshops.

Impacto:

The project will have a significant impact on:

- Integrated and consolidated scientific foundations for engineering cognitive systems under a variety of (outdoor) physical instantiations.
- Significant increase in the quality of service of such systems and of their sustainability in terms of, usability and serviceability, energy consumption, through the integration of cognitive capabilities.
- Innovation capacity in a wide range of application domains through the integration of cognitive capabilities.
- Improved competitive position of the robotics industry in existing and emerging markets for instance in the public information, cultural heritage, tourism, education and entertainment sector.

Presupuesto: 2,494,228.00

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