Universidad de Alcalá

LOCATION SYSTEM AND NAVIGATION ASSISTANCE FOR BLIND PEOPLE, USING ARTIFICIAL VISION

Patent
ES2447641

Code

BIO_UAH_13

Application areas

- Information and Communication Technologies
- Biological Sciences

Type of Collaboration

- License agreement

Main Researchers

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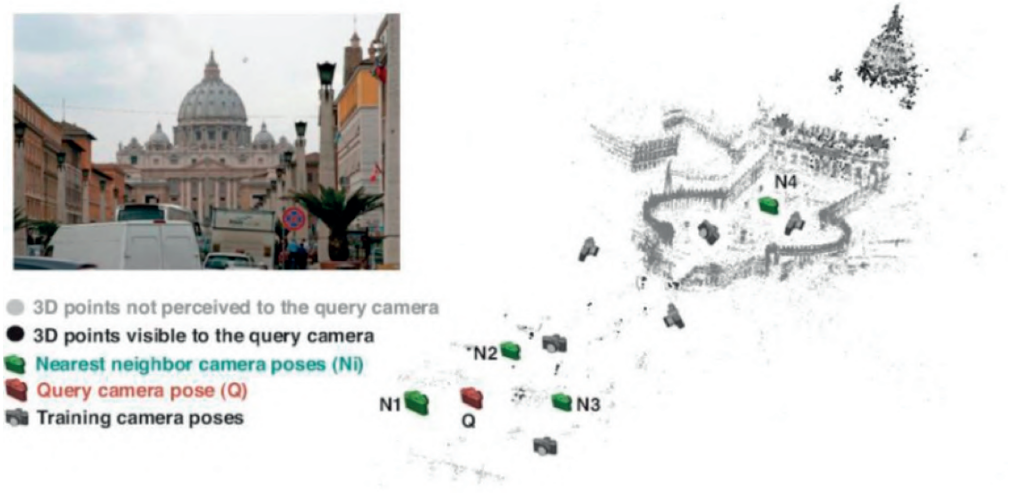

ABSTRACT

Navigational system for blind people sufficiently robust and simple to use that lets obtain an accurate location of the user in a known or unknown environment, both indoors and outdoors location. In this way the system will indicate the path that a person must follow to get to a destination, using acoustic information obtained by a voice synthesizer, similar to how the current GPS navigators do it. To this end, a method of locating and learning will be used, inspired in how human beings use visual capacity.
The location and environment mapping are two dependent processes that are calculated while the user navigates through it. The techniques are called SLAM (Simultaneous Localization and Mapping) and in recent years they have extended their application in the field of robotics and other emerging fields such as locating for blind people or surgery minimally invasive.
As a result of the great advances in research on object recognition using artificial vision, computers are able to recognize places such as monuments, or identify different objects in an image, such as faces or people, just by analyzing a single image. More and more, computers can develop similar tasks to the human vision.

ADVANTAGES AND INNOVATIONS

- It is the first system worldwide that presents the use of visual maps obtained by a stereo camera for navigation assistance to blind people, using visual information. It is an evolution of the SWAN Project (System for Wearable Audio Navigation) developed by the Georgia Institute of Technology, Atlanta, United States.
- In the near future the system is likely to be commercially exploited by institutions and companies in a variety of fields such as: assistance to the blind navigation, augmented reality, video games, humanoid robots, etc.
- The system has been successfully tested in the navigation assistance of humanoid robots and in a basic version with real blind people in the center of Madrid and Alcala de Henares.