

UNDERWATER ROBOT EQUIPMENT USER INTERFACE WITH MANIPULATION AND REALISTIC PRE-SIMULATION CAPABILITIES

DESCRIPTION OF THE TECHNOLOGY

In the context of underwater scenarios there is a lack of realistic 3D simulation systems and interfaces that allow the user to remotely control autonomous and teleoperated mobile manipulator robot tasks.

The use of robots in dangerous scenarios is sometimes essential, especially in situations involving accidents, fire, smoke, radiation or deep water, where it is almost impossible to gain direct face-to-face access.

In response to this issue, researchers from the Interactive and Robotic Systems Lab at the Universitat Jaume I in Castelló have developed a software package that allows underwater robots to be controlled remotely. The improvement is achieved by enhancing the reality received from the robot located in the dangerous setting, and joining it with 3D information extracted through artificial intelligence techniques, which results in a mixed reality that is very useful for the user. Thus, we have underwater robots with the ability to manipulate, obey the commands of the human operator, simulate the effects of robotic actions

before they occur, and enrich the information offered to the user, which makes it easier to monitor tasks and improves safety.

The system allows the state of the robots to be represented in the 3D environment, and data are obtained from the real robots as regards vehicle and manipulator arm position, as well as information received from cameras and sensors. The user interface incorporates a realistic simulation system to experience the user interface functions with simulated robots systems and telemetry, before interacting with the real systems.

The development of this user interface was carried out during the TWINBOT project, and validated under real conditions at the Research Centre for Robotics and Underwater Technologies at the Universitat Jaume I, interacting with two G500 vehicles. Furthermore, the software has been improved and adapted to underwater settings with industrial pipelines during the first 6 months of the H2020-EIPeacetolero project.

SECTORS FOR COMMERCIAL APPLICATION

- Industrial sector
 - Underwater settings.
 - Radioactive environments or settings that are hazardous to human health.
 - Dangerous situations resulting from accidents, e.g. fire or smoke.
- Research sector
 - Security and telecommunications.

TECHNICAL ADVANTAGES AND COMMERCIAL BENEFITS

Advantages:

- Greater precision in robot manipulation and control in adverse or dangerous scenarios.

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Benefits:

- Increased efficiency in the tasks performed by the robot.
- Reducing risks for people in dangerous or adverse situations where intervention is required.

STAGE OF DEVELOPMENT OF THE TECHNOLOGY

The technology has been validated under real conditions at the Universitat Jaume I's Research Centre for Robotics and Underwater Technologies.

INDUSTRIAL AND INTELLECTUAL PROPERTY RIGHTS

Software Registered software.

COLLABORATION SOUGHT

Development and adaptation of the technology to particular applications through specific agreements and a subsequent licensing agreement with companies.

RELATED IMAGES



CONTACT DETAILS

César Viúdez
Oficina de Cooperación en Investigación y Desarrollo Tecnológico (OCIT)
Universitat Jaume I de Castelló
Tel: +34 964387669
e-mail: patents@uji.es
Web: <http://patents.uji.es>