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A ROBOTIC ANTI-PERSONNEL LANDMINE DETECTION SYSTEM

#autonomous robotics #mobile robotics #computer vision #AI

Demining involves high-risk manual operations. Nonetheless, methods for detecting landmines with a low magnetic signature remain unreliable to date. This finding prompted the experts at CAPACITÉS to devise a novel multi-sensor detection system that combines mobile robotics and artificial intelligence (AI). This project, developed in partnership with the French robotics specialists SHARK ROBOTICS, and recognised as a viable innovative solution by the Agence de l'Innovation de Défense, AID (Defence Innovation Agency), was backed by the RAPID subsidy program.

DEVELOPING A ROBOTIC MULTI-SENSOR DETECTION SYSTEM

The manual detection of landmines is a complex and hazardous process. In order to automate it, CAPACITÉS's experts performed at first an exhaustive analysis of the manual detection process and its constraints. Following this preliminary phase, they were then able to offer a suitable set of specifications for a mobile, multifunctional robotic system.

The resulting machine can be as well operated remotely and fulfils other tasks of the detection process such as demarcating the study area. Mounted on a mobile platform and equipped with a multi-articulated arm, the robot is also easy to transport and can be operated in a wide variety of environments.

Their primary achievement was combining the sensors in such a way as to provide unprecedented flexibility of use. The associated technologies include ground-penetrating radar, sounding and vision sensors.

This project, conducted in partnership with SHARK ROBOTICS, received support from the Ministère de l'Economie et des Finances (Ministry of Economy and Finance), the Direction Générale des Entreprises (Directorate General for Enterprise) and AID.

Their second accomplishment involved multi-parameter analysis through AI. By considering factors such as soil type, the nature of the object and its position, the operator thus possesses pre-analysed information promoting enhanced decision-making.

To successfully complete this project, the experts at CAPACITÉS SAS greatly profited from the support and technical resources offered to them by the teams at the Laboratoire des Sciences du Numérique de Nantes, LS2N (Laboratory of Digital Sciences of Nantes). ■

This project was supported by :



Areas of expertise:

- Autonomous robotics
- Data science and AI
- Computer vision

CAPACITÉS SAS :

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