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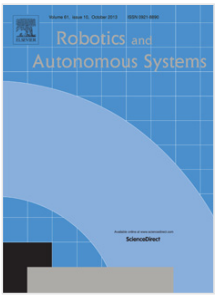

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An Autonomous All Terrain Robotic System for Field Demining Missions

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Abstract

Mines deployed in post-war countries pose severe threats to civilians and hamper the reconstruction effort in war hit societies. In the scope of the EU FP7 TIRAMISU Project, a toolbox for Humanitarian Demining missions is being developed by the consortium members. In this article we present the FSR Husky, an affordable, lightweight and autonomous all terrain robotic system, developed to assist human demining operation teams. Intended to be easily deployable on the field, our robotic solution has the ultimate goal of keeping humans away from the threat, safeguarding their lives. A detailed description of the modular robotic system architecture is presented, and several real world experiments are carried out to validate the robot's functionalities and illustrate continuous work in progress on minefield coverage, mine detection, outdoor localization, navigation, and environment perception.

Keywords: Robotic System Architecture, Field and Service Robotics, Humanitarian Demining.

1. Introduction

The removal of landmines has become a global emergency. According to UNICEF, over 100 million landmines are still lodged in the ground worldwide, harming and taking lives of over 20 thousand people every year, the vast majority civilians. Battlefield debris like landmines and other unexploded ordnance (UXO) may remain active for decades, posing an eminent risk for local people.