

Close detection robotic platform for Search And Rescue missions based on Bluetooth Low Energy

Juan Cantizani-Estepa², Juan Bravo-Arrabal¹, J.J. Fernández-Lozano¹, Sergio Fortes²,
Raquel Barco², Alfonso García-Cerezo¹

¹Universidad de Málaga, Robotics and Mechatronics Lab, Andalucía Tech, 29071 Málaga, Spain. jfl@uma.es
²Instituto de Telecomunicación (TELMA), Universidad de Málaga, CEI Andalucía TECH. E.T.S. Ingeniería de Telecomunicación,
Bulevar Louis Pasteur 35, 29010 Málaga, Spain. sfr@ic.uma.es

ABSTRACT

Improvements in telecommunications and digitalization directly improve the efficacy of a wide variety of processes. Recently, detection systems have received considerable attention because of the importance of tracking infected people contacts during SARS-CoV-2 pandemic. Such implementations can be useful in the task of finding potential victims in the context of emergency response, especially in situations where GPS is not available or inspection by imaging is not practical. Radio signals come into play, and specifically from devices that transmit periodically and with low power consumption. With the rise of Internet of Things over the last years, the number of wearable devices that support BLE, such as smartbands, smartwatches or smartphones, has been increasing constantly, as well as the number of users that carry them. Those devices can provide considerable assistance in locating injured or unconscious people. This work presents a system for detecting victims by means of a terrestrial search and rescue (SAR) robot. A real implementation of a close detection robotic platform based on BLE for SAR interventions is laid out. To estimate the distance between a robotic agent and potential victims within an experimental area, a Log-distance path loss model is presented. The proposed scheme has been tested in realistic scenarios during SAR exercises.

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