GPRS-Based Remote Sensing and Teleoperation of a Mobile Robot

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Abstract:
The main objective of this research was to design and implement a remote sensing and monitoring system running on mobile robot with obstacle avoidance capability in unreachable area. A simple mobile robot prototype with onboard sensors has been designed and implemented to scan and monitor several variables in the surrounding environment. Teleoperation of such a mobile robot is a challenging task that requires an efficient interface and a reliable real-time robot control to avoid obstacles. The proposed system enables the user (base station) to send commands to the remote station (mobile robot), and receive scanned data and images from the environment through the internet and mobile DTMF signal. The proposed system hardware and software was implemented using PROTUS development software to obtain the suitable design parameters. Then, real experiments have been achieved to demonstrate the system performance including both the ultrasonic teleoperation of mobile robot navigation to avoid obstacles, and real-time sensing and monitoring in unreachable area.

Keywords— Mobile Robot, Robot navigation, Remote sensing and monitoring, Wireless sensor networks, Obstacles avoidance.

10th IEEE Intr. Multi-Conf. on Systems, Signals, Devices (SSD13), Tunisia, 18-21 March, 2013.