

Hybrid wireless sensor networks: A prototype

Wireless sensor networks (WSNs) are widely used to assist monitoring of an area of interest whenever manual monitoring by skilled personnel is not convenient if not prohibitive. In this paper, we propose a step ahead with respect to the current status of art, with the design and implementation of a novel networked architecture which integrates a set of static ground nodes, an Unmanned Ground Vehicle (UGV), and an Unmanned Aerial Vehicle (UAV) in a unique monitoring system. All these devices are equipped with sensors, a microcontroller and a wireless communication module such that they are capable of covering an AoI in the terrestrial and aerial dimension. In the proposed architecture, the mobile robot can inspect areas which have no fixed ground sensors, whereas sensors installed on the UAV cover the ground areas from above, ensuring wider coverage.