

A Review on Wireless Sensor Networks and Object Detection Methods in Military Applications

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Abstract

Object detection and tracking is a very useful technique in today's world when it comes to military activities as well as daily activities. If a battlefield is considered, there are places that are inaccessible to humans. In such instances, it is easy to monitor the location remotely. Also, using an automated monitoring system reduces the life risk of the soldiers deployed in the specific location. This review study is conducted with the aim of identifying the most suitable technologies and sensors to be used in the wireless sensor network along with the image processing and machine learning techniques available for object detection. This review study is carried out under two main topics as, wireless sensor network-based military applications and object tracking and detection. The systematic literature review was conducted to identify the most appropriate set of research papers. Then the selected papers were reviewed, and the most important facts needed to identify the solution were identified. The network topology of the systems is ad-hoc topology. ATmega182L and ATmega 2560 are the mainly used type of microcontrollers for the previously developed systems. PIR sensor and CMOS camera module are the mostly used equipment for the process of acquiring images. Image processing techniques are used for object detection and classification purpose. This review paper concludes that the best type of microcontroller is ATmega, CMOS LM9628 to use as an image sensor and the protocol for the WSN can be ZigBee.

Keywords: *Image processing, Military, Unmanned air vehicle, Wireless Sensor Network*