

Quadcopter based Surveillance System for an Industrial Environment

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The protection of industrial infrastructure is a growing concern within industrial environments. Utilization of humans for efficient surveillance and security monitoring in a large area is inefficient since humans generally fail to maintain the concentration for longer periods of time and also due to cost involvement in employing sufficient human labor. A system architecture and design for a perimeter security system to address the aforesaid issue for large industrial facilities such as airports, seaports, logistic storage complexes and military establishments was being developed as the outcome of our research. It employs an integrated multisensory system to detect, assess and track perimeter intrusions. These sensors are integrated together into a standalone system that acquire, on processing and analyzing the probability of possible threat scenarios ignoring nuisance alarms. Upon finalizing an acquired threat, a quadcopter is autonomously dispatched to the location using an advanced location identification system, which will prioritize the locations according to the severity of threat whilst also alerting the security staff. On reaching the location, the quadcopter provides a real-time video feed while maintaining the focus on the detected target. This system is designed to operate on 24/7 in all-weather condition. A command and control center provides situational awareness to facilitate the security personnel responsible for monitoring and managing incidents. Due to the outcomes of this research, human security personnel will be provided with more relaxation in order to facilitate them to focus on tasks which demand cognitive skills. The proposed method will enhance the surveillance capacity of an installation as well as the rapid deployment capability ultimately leading to an efficient and effective security system with adequate defense in depth which is not found in conventional security systems.

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