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Invisible Surveillance to Track Enemy Intrusion using MEMS

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ABSTRACT

The greatest threat to national security is “Terrorism” infiltrating through borders. In critical border areas such as Kashmir and Bangladesh regular forces or even satellites cannot monitor these intruding terrorists, as the area monitored is quite large and quite complex. This paper provides an innovative and effective solution to this problem.

The aim of our present work is to design a next generation intelligent ultra small dust like wireless sensor motes which have multiple onboard sensors and a processor, which has the ability to detect an enemy intrusion across borders and battlefields. Thousands of these smart dust motes can be deployed within a large area in a few hours by one or two men. The motes can form a network on its own among them, are small in size, rapidly deployable, have wireless connection to outside world. They detect the intrusion and classify it into vehicles or individuals and groups. Onboard hardware includes a variety of sensors for vibration/seismic, magnetic, acoustic and thermal signature recognition, a microcontroller for processing these sensor values and a radio transceiver for communication over a wireless network. The system processes the sensor readings, classify the targets and the tracking history can be viewed in the Graphics LCD display attached in the central monitoring unit. The central monitoring node acts as the parent node in a peer to peer wireless network model. The dust motes communicate with central parent node using wireless radio network.

Key words: MEMS, micro controller and sensors