Deployable Sensor Networks

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There has been a tremendous development in the sensor networking arena in recent years, and networks of sensors can be deployed to track enemy location and movement. Small and cheap sensors can monitor sound levels, metal objects passing nearby, body heat through infrared emissions, and a variety of chemicals. Their information can be received by base stations or "collector" sensors with stronger antennas and more significant power, aggregated and processed and then forwarded to the control center for inclusion in the situational awareness display.

While the individual sensors are able to collect useful information, the information from many sensors needs to be aggregated, analyzed and understood in real-time to help make timely and intelligent decisions. In the last 2-3 years a number of theoretical and/or simulation studies have been made on the topic of object tracking. While these studies are useful, they are too general and provide little guidance for actual deployment of sensor networks for real-life location tracking of the enemy.

We focus on supporting the needs of urban warfare where movement is usually restricted to the lanes and roads. We expect to produce prototypes of working systems and actual configurations of sensor motes to support enemy location tracking. Our suggested configurations will take into account climatic conditions, equipment limitations, layout of the urban environment, and type of enemy (personnel, vehicles etc).

Related Thesis:
- Study of RF characteristics of the Sensor Networking System
- Performance Evaluation of IEE 804.15.4/Zigbee Network Architectures
- Motion Detection for Sensor Networks
- Tactical Remote Sensor Systems

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