MIT Lincoln Laboratory: Remote Operated Intrusion Alarm

Our design team is working with MIT Lincoln Laboratory to create a Remotely Operated Intrusion Alarm. This project has been developed in a smaller version, which was previously designed by MIT Lincoln Laboratory as a classroom project. However, that system has many shortcomings such as slow processing speed, low accuracy and poor portability.

The goal of this project is to prototype a stand-alone radar system that overcomes these faults. The final system detects an intruder and sends a message with information pertaining to the intrusion to the user via text or email.

In the beginning of the operational flow the 2.4GHz radar scans the room and sends an audio signal through a filter and into the TI PCM1808 ADC. The ADC then converts the data and ports it to the TI Stellaris LM3S9D92. The Stellaris performs the necessary calculations to detect an intruder and measure its speed and distance. This data is sent to a PC via Ethernet connection, which subsequently attaches a timestamp. The PC can then send alert messages to via text message or email to relay the information of the intrusion.

This design is small, power efficient, and will allow maximum sampling rate in order to obtain real-time data, as well as system portability.

http://www.egr.msu.edu/classes/ece480/capstone/fall11/group06/index.html

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