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Lab/Semester Thesis

Secure Messaging for Sensor Networks

Wireless sensor networks are a valuable tool to gain a digital representation of the physical world. Sensor nodes are equipped with a radio module to exchange messages with other nodes or the base station. Accurate and trusted sensor readings are necessary to monitor environmental conditions (e.g. temperature, humidity, soil moisture), the state of health of patients in a hospital (e.g. heartbeat, blood pressure) and to warn people in advance (e.g. fire, avalanche). However, most existing sensor networks communicate use plain-text messages since running encryption algorithms in software is not feasible given the hardware constraints of sensor nodes. Therefore, modern sensor node platforms support secure messaging using dedicated hardware.

The Pixie sensor nodes developed at TIK contains an Atmel AT86RF212 radio chip which offers hardware support for the Advanced Encryption Standard (AES). The goal of this thesis is to provide secure messaging for the TinyOS operating system. The current communication stack should be extended with support for encrypted messages.



Required Skills

You should already have some skills in software development and you should be familiar with the C and JAVA programming language.

Are you interested? Please contact us by email or phone.

Advisors

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