SRM SenseNet

The research in Wireless Sensor Networks has blossomed in recent years because of the potential applications in many areas, such as environmental monitoring, surveillance, disaster recovery and rescue. Wireless Sensor Network Testbeds (WSN-Testbeds) are the basis for experimentation with WSN in real-world settings, and they are also used by many researchers to evaluate specific applications pertaining to specific areas.

SRM Sensnet consists of sensor nodes connected to a testbed server facilitating remote access to users. It provides an easy data retrieval mechanism which helps to store the structured data results in the testbed. Additionally by providing web interfaces, our testbed allows the users to reserve their sensor motes. Users can experiment with real hardware resources and interact with our testbed in real-time. This will enable the students, faculty and other research communities all over the world to collaborate and do research in the cutting edge technologies in the field of wireless communication.

Wireless Sensor Networks:

Highly distributed networks of small lightweight wireless nodes

Deployed in large numbers

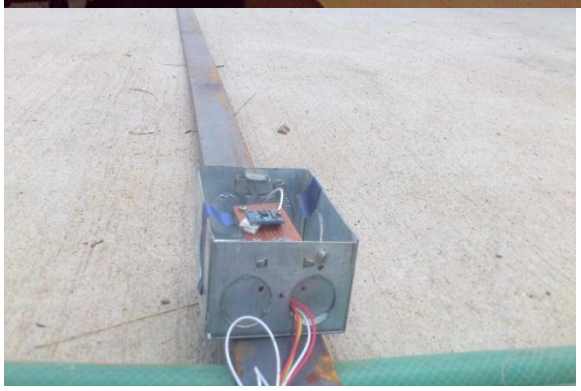
Monitors the environment or system by measuring physical parameters such as temperature, pressure, humidity.

Sub Link2 - SRM SenseNet Architecture

Our WSN Testbed consisting of three different levels of deployment:

1. Sensor nodes
2. Microservers
3. Server MAchine

At the lowest level sensor nodes (motes) are placed in order to take sensor readings or to perform certain functions based on the program. These sensor nodes are connected to microservers at the second level through USB hub. Server Machine is placed at the third level which connects to all of the microservers over an Ethernet cables. The Server handles a database containing information about the different sensor nodes and the microservers they are connected to the server machine also provides an interface between the testbed and any end-users. Users may log onto the server to exchange messages with nodes contained in the testbed.



Features of our WSN testbed

1. Remote Programming
2. Status Informations
3. Mote Informations
4. Killing a SerialForwarder
5. Execution Log
6. Alert to user
7. Easy Data Retrieval

Sub Link-3 Wireless Sensor Experiments

1. Blink Application -To test whether the boot sequence and the millisecond timers.

2. Mote-Mote Communication -To understand how radio communication is achieved between motes.

3. Mote-PC Communication using TestSerial application -To understand how to communicate with a mote from a PC.

4. Listen Tool: Displaying raw packet data -To print raw packet data information on the PC console using

Listen tool.

1. MIG (Message Interface Generator) -MIG generated code will automatically parse and print each of the fields in the packet.
6. RSSI Demo -To get RSSI (Received Signal Strength Indication) readings from incoming packets.
7. Collection Tree Protocol -To build collection tree applications with BaseStation as a sink.
8. Backpressure Collection Protocol -To build Collection tree applications using dynamic routing.
9. The Oscilloscope application -To display sensor readings on the PC.
10. Printf application -To debug TinyOS applications by printing messages over the serial port.
11. Temperature and Humidity -To Sense Temperature and Humidity and display readings over serial

Sub Link-4 Projects done in Wireless Sensor Networks

1. Data Aggregation Technique in Wireless Sensor Networks
2. Comparative Analysis of BCP a nd CTP protocols using RC5 Algorithm
3. Implementation of TinySec onto Collection Tree Protocol
4. Load Balancing in Backpr essure Collection Protocol
5. Congestion Control in Backpressure Collection Protocol
6. Diffie-Hellman Key Exchange in Wireless Sensor Networks
7. Energy Aware in Backpressure Collection Protocol
8. Analysis of TinySec and TinyECC
9. Network coded CTP in Wireless Sensor Network
10. Heterogeneous Data Aggregation in Wireless Sensor Network
11. Comparative Analysis of MAC protocols
12. Implementation and Performance analys is of ACS-128 CBC algorithm in WSN
13. Secure data exchange in Wireless Sensor Network
14. Performance Analysis of TDMA and CDMA in WSN
15. Priority scheduling for data Collection in Cluster Sensor Network
16. Monitoring Restricted areas using PIR sensors and video surveillanc