Projects Statements (Supported by Dr. Tarek Sheltami)

Project 2: Identifying the direction of a phenomenon in wireless sensor networks

Wireless Sensor Network (WSN) is a network of devices that have one or more types of sensors connected together via wireless communication to monitor cooperatively different environmental conditions such as temperature, humidity, sound, etc. in different locations. In this project students are required, by simulation, to construct a sensor network using grid, mesh, or random topologies. After creating the network, we should define an application such volcano evaluation, sandstorm detection, fire detection…etc. The goal is to identify the direction or expansion of the phenomenon.

Expected Output:

Investigation on protocols that identify the movement or the direction of a phenomenon. A bonus will be given to those who conduct a performance evaluation of more than one protocol.

Project 3: Comparison between Centralized, distributed and hybrid approaches in WSN

Monitoring environmental changes and detect specified events is the main function of WSNs. Three approaches can be used to send information, Centralized, Distributed or Hybrid approaches.

Since power resources for sensors is very limited in WSN, it is very important to reduce sensor power consumption with acceptable detection accuracy according to application requirements.

To reduce power consumption we should reduce processing, transmission or sensing consumption or all of them.

Students are required to perform a comparison between the three approaches and determine the life of the network.

An unpublished paper will be given to the students to build some background about the subject.

Expected Output:

Performance evaluation to perform a comparison between the three approaches.