

## **Data transmission in wireless sensor network with greedy function and particle swarm optimization**

### **ABSTRACT**

Precision farming is a farming management concept based on observing, measuring and responding to the varying crops' needs. For this research, Wireless Sensor Network (WSN) is proposed to be implemented in precision farming to act as a decision support system for the farmers. However, WSN conventional system namely Direct Transmission (DT) protocol suffers high energy consumption, reducing the monitoring ability of the farmers due to the fast energy-depleting sensor nodes. Acknowledging this problem, researchers had developed many protocols such as Quality of Service (QoS), Low Energy Adaptive Clustering Hierarchy (LEACH), Location-based, and Power-Efficient Gathering in Sensor Information System (PEGASIS). For this research, PEGASIS is selected for its high energy-efficiency and compatibility with the proposed system. As distances affect greatly on the energy consumption, Particle Swarm Optimization (PSO) is developed to replace greedy algorithm in PEGASIS to reduce the distances of data transmission. From the tests, PSO is able to reduce the total chain distance (TCD) by up to 7.69% in comparison to the greedy algorithm.