**Lifetime Prediction for Wireless Sensor Networks**

**Descriptions**: A wireless sensor network (WSN) provides the means for monitoring physical or environmental conditions such as temperature, sound, humidity, air pressure and many others through a set of sensors. A WSN typically transmits the observational data through a data network to a central location for further processing. WSNs have been widely used for many real-time applications such as health systems, intrusion detection, military services, agriculture, etc.. due to its low-power, low-cost and high-reliability. However, to ease deployment, sensors are often battery-powered and constraints in size and thus their lifetime is limited. As a result, network lifetime is one major problems for a WSN to maintain sustainable operations. Since it is not possible to determine the network lifetime within a reasonable time, it is therefore important to predict the network lifetime of a WSN to have an appropriate decision making.

This project aims to estimate lifetime of a WSN based on traffic profile and energy profile of each sensor in the network and on network configurations parameters.

The project consists of the following steps:

1. Doing literature review to see how works have been done in research community.

2. Evaluating existing methods for lifetime prediction (including ones using simple prediction, Machine Learning models, Deep Learning models etc…).

3. Proposing a new approach to predict lifetime of a WSN with comparable and better than existing approaches.

**Requirements**: Students do not need to have prior knowledge about WSN but will explore necessary information through the process of project. However, students need to be familiar with C and Python programming language.

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