**Simulating network clustering and routing mechanism for IoT island**

**Our group members**:

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**Introduction**

In this project, we will explore the network clustering and data packet routing when IoT platforms must operate in disconnected modes due to lack of network infrastructures. Here we refer to local networks of IoT devices operating in disconnected modes (due to loss of connectivity to data processing and cloud platforms) as IoT islands, namely, IoT islands are the clusters of IoT devices which are isolated with outside network.

In order to collect data from IoT islands in a timely manner, we will use mobile sink (vehicles mounted with sensors) to go through the IoT islands and collect data from the local data sinks.  In this scenario, data transmission follows the store-forward method, which will be stored in certain local data sinks first and then be transmitted to the mobile sinks later. So, the objective of our research is to figure out how to cluster the sensors inside the IoT island, how to choose the local data sink and how to route the mobile sink to transit the sensing data information to the destination network access point. Besides, IoT always consist of multiple applications working simultaneously, so how to deal with the heterogeneity of the data information being disseminated in IoT is another challenge in our work. Specifically, different applications have different requirements in data transmission process, such as packet delay tolerance, data life time and the transmission reliability. In our mechanism, we will prioritize the sensing data information and give them life-time according to corresponding application requirements.

**Overview**

Our main work includes：

1. Build a IoT island setting using the One Simulator.

2. Developing a new network clustering and data packet routing mechanism with the consideration of heterogeneity of data information in IoT.

3. Simulating the new clustering and routing method using the One Simulator.

4. Simulating the other two existing clustering and routing methods.

5. Testing some performances like data transmission delay and delivery ratio of the three mechanisms, and make comparisons between the two existing method with our proposed mechanism.

**Time-line**

Week 3: project proposal

Week 4: learn to use the One simulator

Week 5: design the setting of IoT scenario

Week 6: design the clustering and routing algorithm for the specific IoT scenario.

Week 7: emulate our proposed clustering and routing mechanism

Week 8: emulate other two existing algorithm

Week 9: make comparison between the existing methods with our proposed mechanism

Week 10: finish the report of this project