Università degli Studi di Napoli "Parthenope"
Corso di Laurea Magistrale – Big Data e Machine Learning

IoT e Lab. (Part I) course – Final project

Project 14 - RPL (Routing Protocol for Lossy networks) simplified

The RPL (Routing Protocol for Lossy networks) strategy was designed for handling the power consumption and specifically to reduce congestions over the network. Design a routing protocol that is able to avoid congestions (i.e too many messages sent to a single node), using a time window parameter (that is spread through the network) that limits the forwarding of messages to neighbors on a "expired" criterion. The network handles 2 type of messages: the time window parameter and a general message to be routed. A message is routed only if it has a valid time, i.e. the receiving node should compare the validity time window (i.e. T seconds), with the originating time (seconds from simulation, *time* command), of the message. Each node should count and print the number of purged (not forwarded) messages. The time window parameter is generated dynamically from a specific node and the general message is introduced in the network from another specific node too. Simulate your timing loops (delay) in sending and receiving messages, in a general way, but correct to prove the goodness of the algorithm/solution.

- Describe the implemented solution in a presentation (slides) providing your reasons on the technical choices (pros / cons), the node scripts (with comments), a demo video of the simulation in CupCarbon 5 (v.5.1.3), the objectives achieved with respect to requirements, etc.

- Also provide the simulation data related to the energy consumption of the sensor network, indicating an estimate of the lifetime of the network.

- Illustrate any possible improvements or criticalities (for example in terms of routing, number of messages, data storage, etc.) of the solution.

- For the delivery of the project, a ZIP archive must be created containing the .PPT or .KEY of the presentation, the CupCarbon project, any attached notes.

- The project must be delivered via email to the teacher (michele.dicapua@uniparthenope.it) within one week before the exam date.