Michigan Tech

EE5726: Embedded Sensor Networks

Assignment #08
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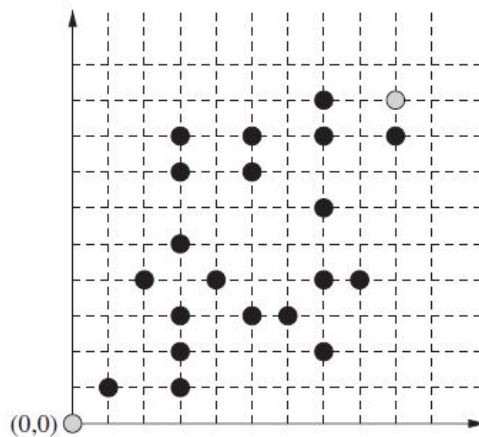
Problem 1

Figure 1: GPSR routing example

GPSR works by combining *greedy traversal* with *perimeter traversal*. The routing algorithm begins with in the greedy mode. If this approach fails, the location is marked and marks the packet to traverse in the perimeter mode which follows a simple planar graph traversal.

In the given scenario, the visited nodes would be:
0,0 - 1,1 - 3,1 - 3,3 - 4,4 - 3,5 - 3,7 - 5,7 - 5,8 - 7,8 - 9,8 - 9,9

As the packet starts from source Node- 0,0 using greedy forwarding, it finds Node 1,1 within its radio range. From Node 1,1 it will choose Node 3,1 using greedy forwarding and then Node 3,3. At Node 3,3 since there are multiple sources within range towards the destination, it switches to perimeter routing and selects Node 4,4 using the right hand rule. Simillarly it chooses Node 3,5. This node traversal continues as long as the packet reaches its destination.

Problem 2

Node A wishes to forward a packet toward destination L with the network being as given in Figure 2.
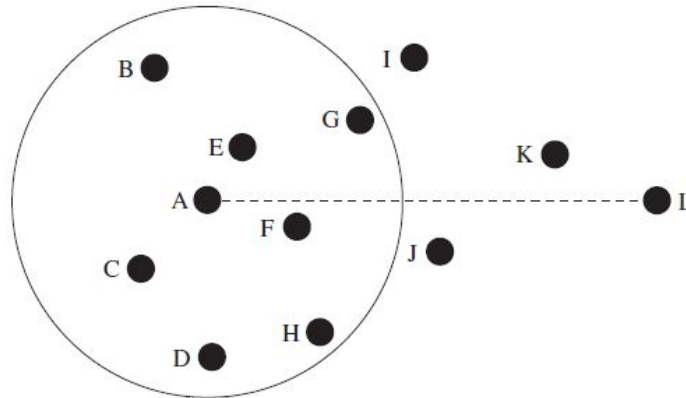

Figure 2: Forwarding Strategies used in GPSR

Various strategies can be employed as follows:

a. Greedy Forwarding:
    Node A will chose **Node G** based on this routing method. This is done because Node G is within the radio distance of Node A and closest to the destination.

b. Nearest with Forwarding Progress:
    Node A will chose **Node E** based on this routing method. This is because Node E is closest to Node A in the forward direction (towards the destination).

c. Most Forwarding Progress within Radius:
    Node A will chose **Node G** based on this routing method. This is because Node G is the farthest away within the radius of Node A towards the destination (by dropping a perpendicular to the axis).

d. Compass Routing:
    Node A will chose **Node F** based on this routing method. This is because Node F has the minimum angle on the axis from Node A to Node L.