WSNOPT is a software system which tests the accuracy of localization methods in wireless sensor network models. For use in MATLAB R2008b

[Note: Use of this software requires some MATLAB programming.]

### Objective

The purpose of this software is to test the efficiency of the parameters and methods provided by the user in the localization of the network nodes.

WSNOPT looks how well each node localizes depending on how away from the GPS beacon in distance and node hops.

[Note: Node hops refer to how many net nodes away from a GPS transmission the node is. In the diagram to the right, the Green Nodes are at least 1 hop from the GPS node.]

WSNOPT also looks at how much area is covered by the GPS nodes with transmission radius S. We want to cover as much area as we can to ensure that a minimal amount of error in the localization of the network.

### How it Works

1. **Input your WSN Model**
   - **Step 1**: Input the Test Model
   - **Step 2**: Testing
   - **Step 3**: Display Results
   - **Step 4**: 3. Display Results

   **1. Input the Test Model**
   
   A moving beacon traveling through the network, localizing the nodes by broadcasting its location to each node in range.

   **2. Testing & Optimizing**
   
   - **Step 1**: 100 (default) test cases are generated with net nodes randomly deployed across an L x L network.
   - **Step 2**: Each test case is executed with the users parameters and localization methods.
   - **Step 3**: Statistics are gathered and displayed.
   - **Step 4**: The user is now able to adjust the GPS and Net Node parameters and rerun the program over the same deployments to see how the results change in the same networks.

   **3. Display Results**
   
   The results are displayed in graphs showing the error (to the right) and what the network looks like and thinks it looks like (to the left).

   These views are available for each test case.

### About

WSNOPT is for use in MATLAB R2008b.