Anchor Node Placement for Localization in Wireless Sensor Networks

by

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A Dissertation submitted to
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in partial fulfilment of
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The undersigned recommend to

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acceptance of the Dissertation

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Thomas Kunz, Supervisor

V. Aitken, Department Chair

Carleton University

2009

Abstract

An abstract should be short and to the point.

This is the dedication...

Acknowledgments

I would like to acknowldege ....

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List of Figures

Chapter 1

Introduction

1.1 Anchor Placement: Equal distribution along 45 Degree Axis

For the first round of testing, chosen more as an excercise in the simulation analysis package in MATLAB©, 4 anchor nodes are placed at the closest node the the 45-degree axes, with increasing distance from the center. 1.1 shows the positions for each iteration.

The 2nd graph in 1.2 shows that the best localization performance is achieved when the 4 anchors are roughly midway between the center of the network and the corners.

The same test is repeated for a grid network layout instead of a random network layout.

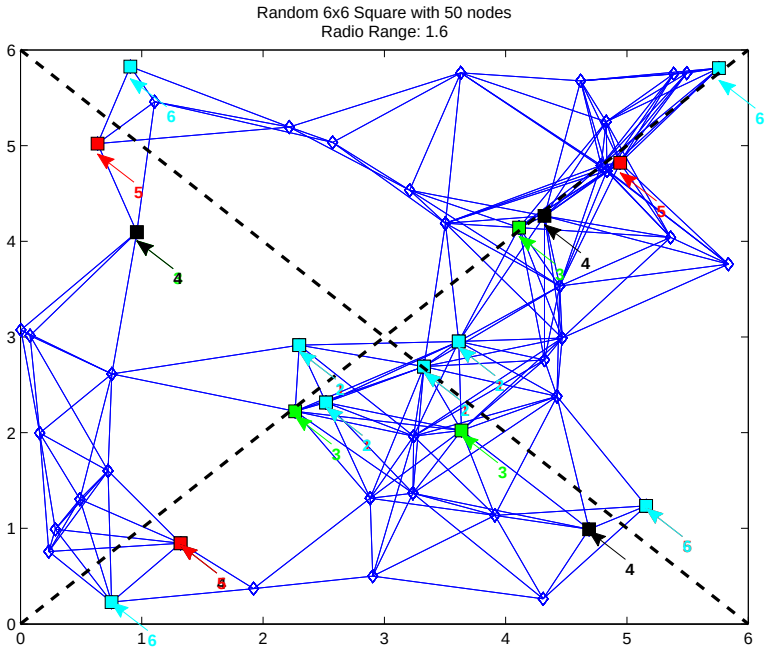
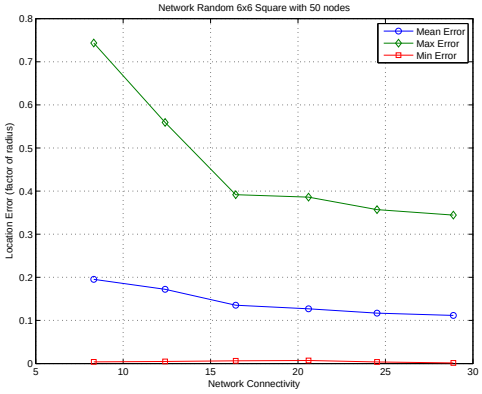
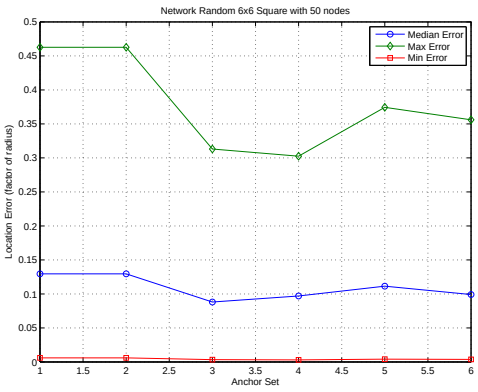


Figure 1.1: The random network used, showing the 6 position sets of anchors.



(a) Error decreasing as network connectivity increases



(b) Error is lowest as the anchors are near the midpoint between center and corners

Figure 1.2: Maximum, median, and minimum errors for various network conditions

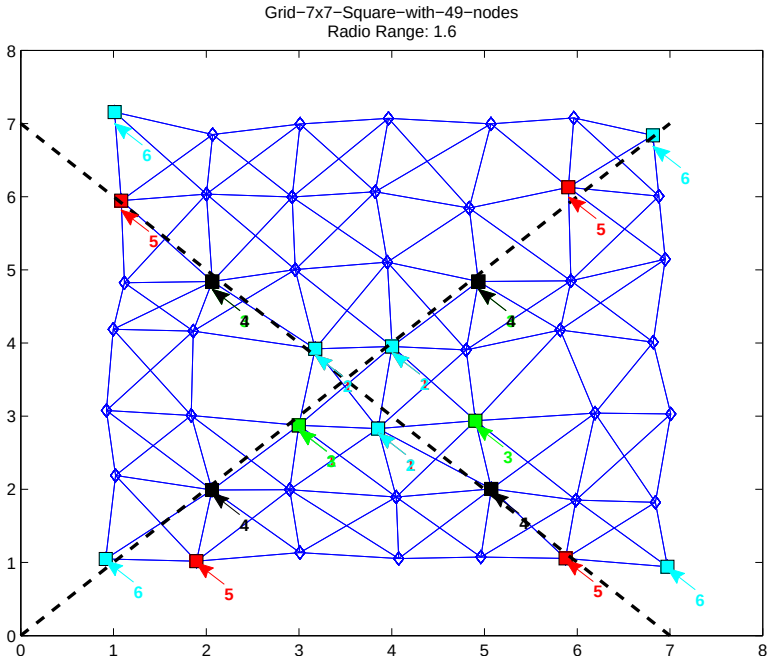
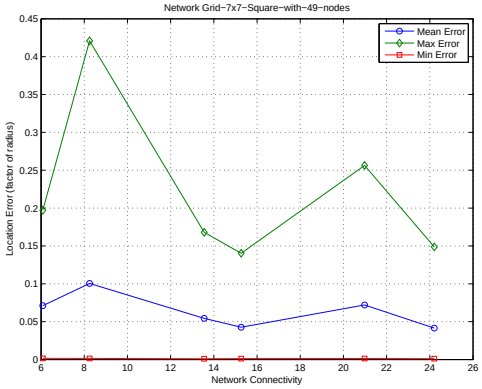
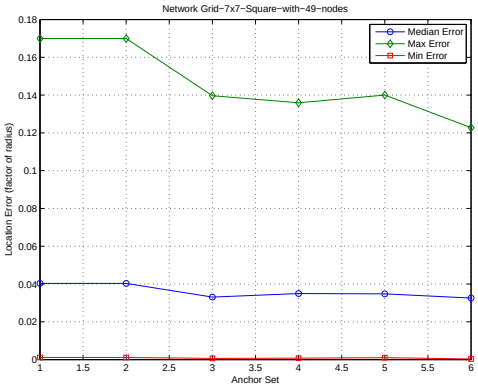


Figure 1.3: The random network used, showing the 6 position sets of anchors.



(a) Error decreasing as network connectivity increases



(b) Error is lowest as the anchors are near the midpoint between center and corners

Figure 1.4: Maximum, median, and minimum errors for various network conditions

Chapter 2

The Beginning of the Details

2.1 Section Heading

Sample section text.

New paragraph.

2.1.1 Sub-Section Heading

Sample text.

new paragraph.

Sub-Sub-Section Heading

Sample text.

Sorry no details available [**?**, **?**].

Appendix A

Derivation of Some Nasty Equation

Here is the derivation.