Distributed Localization of Nodes

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***Abstract* – Our goal of this project is to have virtual robots represented as unknown nodes estimate their position via the help of anchors. Anchors are nodes with known location that can interact with each other. With the help of the Triangulation and Distance Vector algorithms, we can estimate the distance and location of unknown nodes.**

1. Introduction

Our idea is rooted from the curiosity of satellite systems and the process in localizing electronic devices. Satellites use algorithms to interact with each other and estimate GPS locations. The more satellites there are, the higher the accuracy of the estimated localization. We want to simulate this feat in a small scale by creating anchors to represent the satellites and nodes for the devices.

The simulation will consist of at least three anchors and an arbitrarily number of nodes. Both anchors and nodes will be randomly placed in the graph space by a randomized function. The anchors will use the Triangulation Algorithm to estimate nodes within their radius. Once the first node is localized, it will interact with the other nodes to subsequently aid in localizing.

1. Algorithms Implementation