Thesis Outline

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- Introduction
  - Mobile robot localization problem
  - Mobile robot security concerns
  - Problem Statement
  - Brief explanation of solution
  - Thesis Structure
- Literature Review / Previous Work
  - Secure State Estimation
  - Distributed State Estimation
  - Noise Model for Simulated Robots
  - TurtleBot
- Hardware Platform
  - TurtleBot
    - Basic Features and Overview
    - ROS Software Interface
    - Control System
      - Kobuki Base
      - Navigation
  - ZedBoard
    - Basic Features and Overview
    - Xilinx Zynq Features and Overview
- Distributed State Estimation
  - Theory
  - Methods
    - Filters
      - Coordinate Frames

            - EKF vs UKF
            - Inputs and outputs
        - ROS node structure
        - Communications logic
        - Gazebo simulation details
    - Vulnerabilities of Methods
        - DoS attack
        - False Data Injection
- Results
- Future Work
- Conclusion