

# iRobot Create Navigation with Mapping Interpretation Explored Through Smart Camera Networks

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# PROBLEM/MOTIVATION

- ✓ Discuss the idea for project.
- ✓ Define odometry & localization?
- ✓ Why this particular robot?

- ✓ Integrate the iRobot Create platform with the previously developed smart camera network.
- ✓ Using a robot's **odometry** is a popular navigation scheme which incorporates the combination of incremental motion information over time.
- ✓ One problem when experimenting with mobile robotics is **localization**: estimating a robot's position using data received from sensors to identify its relative position and orientation.

# BACKGROUND

✓ Localization Methods

## ✓ Markov Localization

- × Probabilistic Framework
- × Measuring Techniques

## ✓ Monte Carlo Localization (MCL)

- × Sampling Data

## ✓ Simultaneous Localization and Map-Building (SLAM)

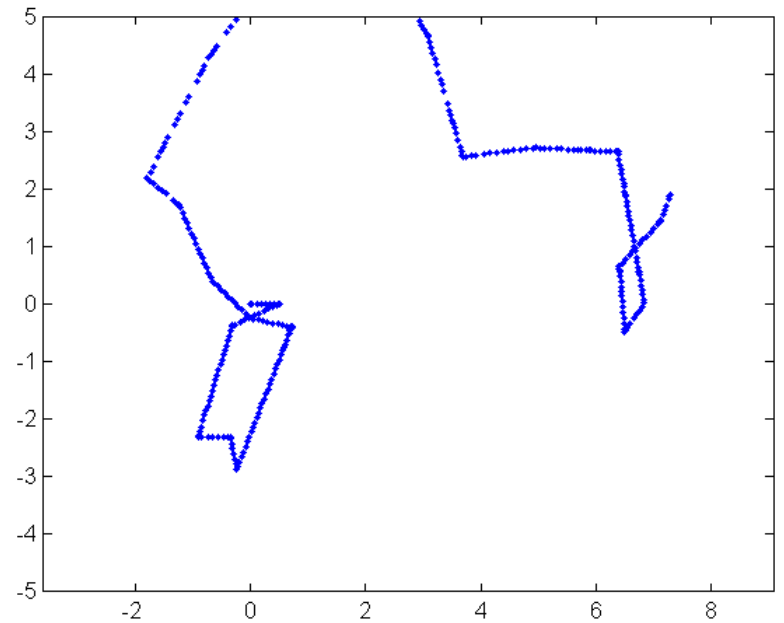
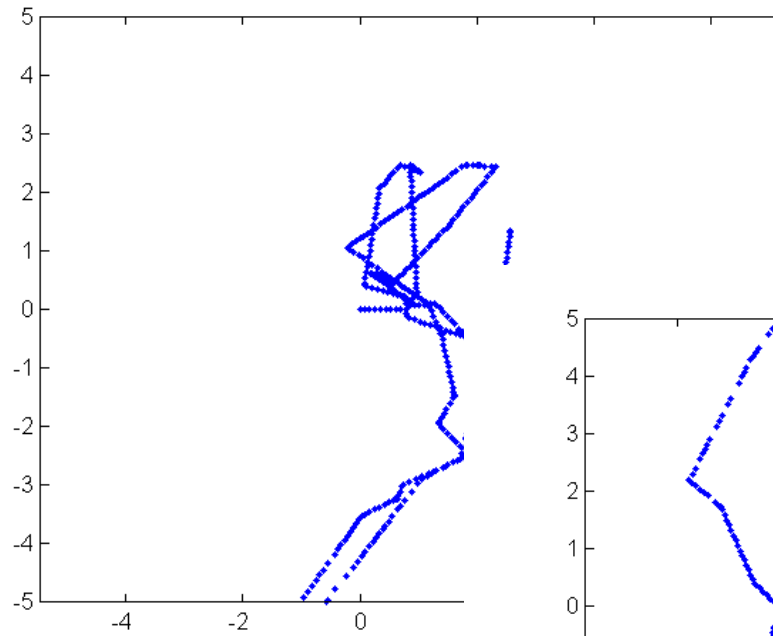
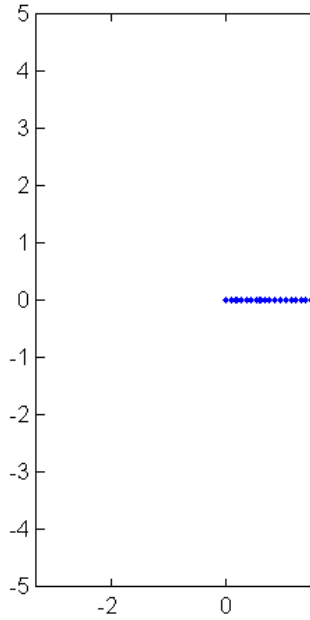
- × Unknown location/environment
- × Map Building
- × Position Calculation

# TECHNICAL APPROACH

- ✓ Smart Camera Network
- ✓ Programming the iRobot Create
  - ✓ Se
  - ✓ Bl



# MAPPING INTERPRETATION



# FUTURE RESEARCH

- ✓ Using more than one robot and more sensors
- ✓ Building maps of more than one environment
- ✓ Controlling the time it takes to actually localize the robot and the smart camera network
- ✓ Ground markers - line tracking
- ✓ Map Matching
  - ✓ Structured Environment



Questions

Comments

Concerns

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