

Today

- SLAM (simultaneous localization and mapping) overview
- Robot pose, map
- Example SLAM solutions
- Structure of Solution to SLAM
- SLAM backend
 - MAP
 - MLE
- Is SLAM solved?

Autonomous Navigation

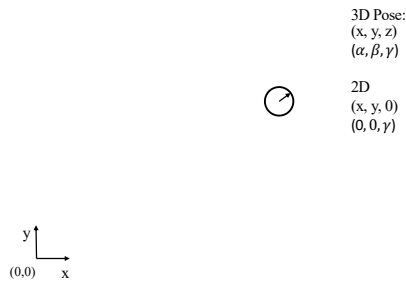
- A fundamental problem in robotics research
 - Key Issues
 - Mapping
 - Localization
- SLAM (simultaneous localization and mapping)
- Path Planning, Collision avoidance
 - Homing: move to a specific location
- Dominant approach to SLAM

$$p(\mathbf{x}, \mathbf{m} | \mathbf{Z}, \mathbf{U})$$

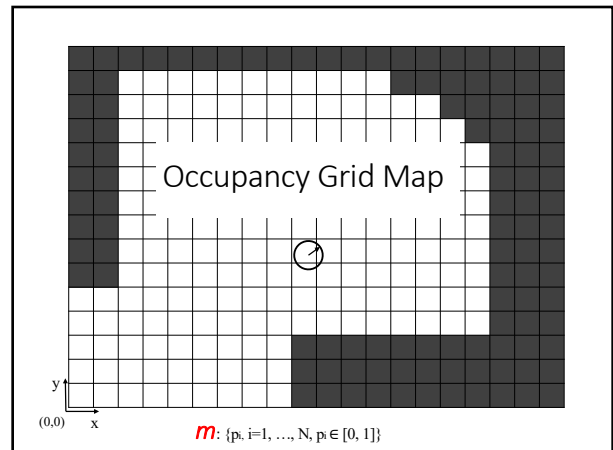
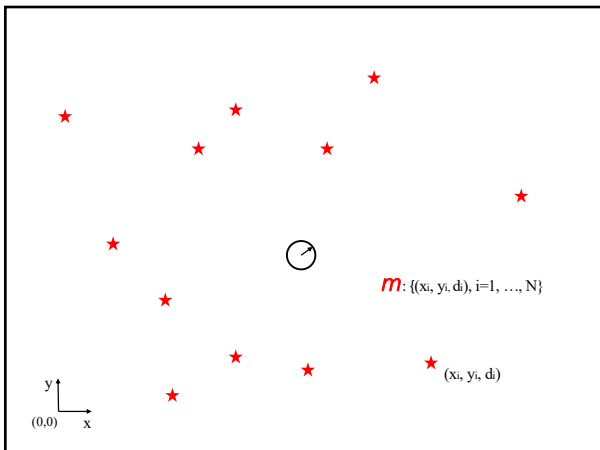
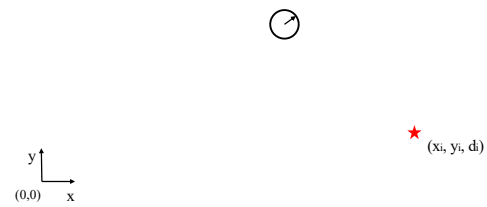
Unknowns Knowns

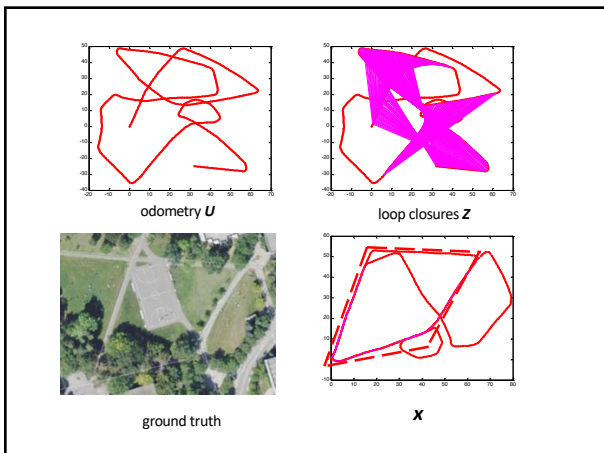
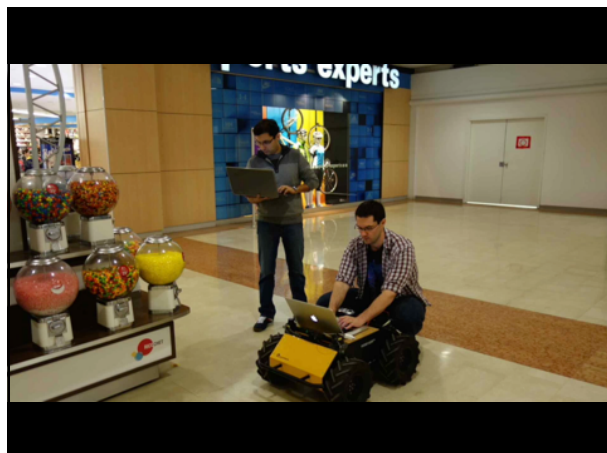
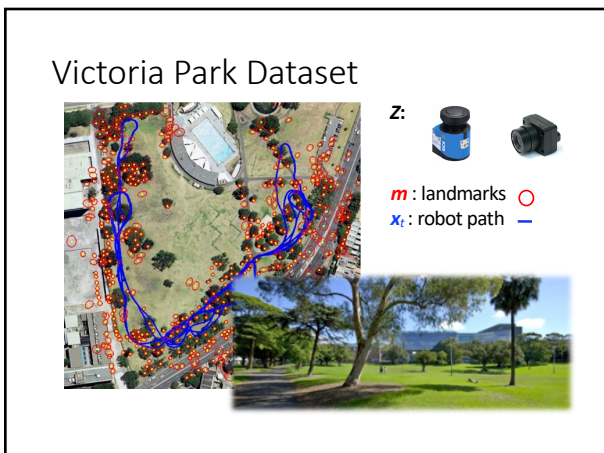
- Sensor measurements
- Odometry

Robot Pose \mathbf{x}






Map \mathbf{m} : Feature-Based





ORB-SLAM

ORB-SLAM2: an Open-Source SLAM System for Monocular, Stereo and RGB-D Cameras

Raúl Mur-Artal and Juan D. Tardós
raulmur@unizar.es tardos@unizar.es

ORB-SLAM (2015) and ORB-SLAM2 (2016)

<http://webdiis.unizar.es/~raulmur/orbslam/>

