Sponsored by RiCH Robotics
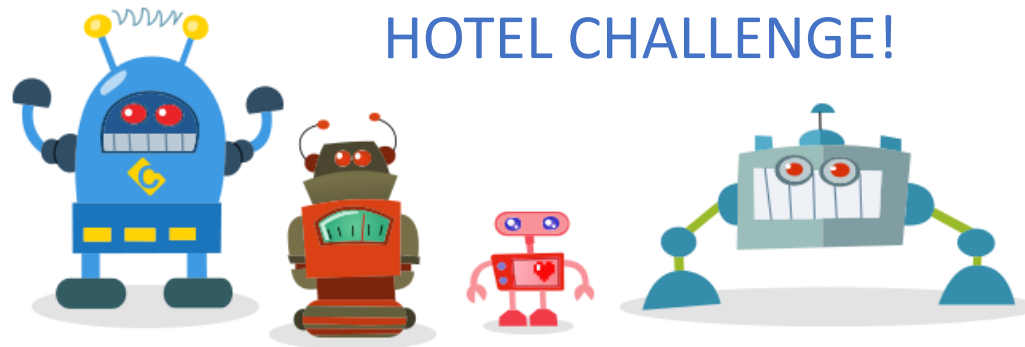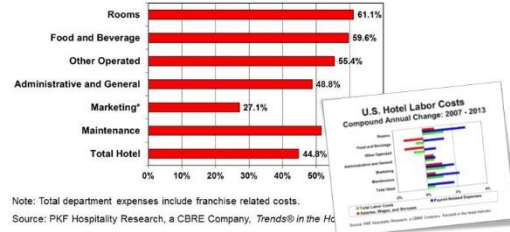
IEEE Robotics Winter School 2017

Challenge Problem Statement: Localization

1. Generated map should have a high accuracy
2. Localization should be implemented on real time manner (at least, 10Hz)
3. Does not use State-Feedback-Data of Robot

HOTEL CHALLENGE!

U.S. Hotel Departmental Labor Costs
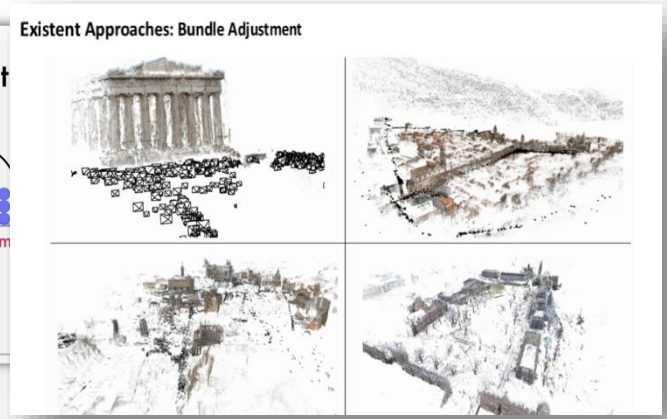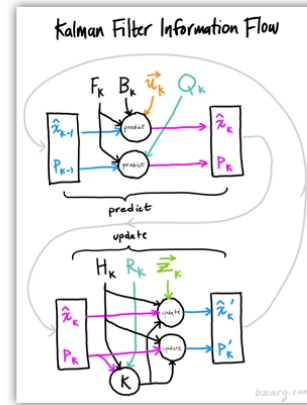**2013 – Percent of Department Expenses**

To enable robot to navigate autonomously in hotel or conventions

PROBLEM: Localize Robots in Indoor Environments

SLAM

Existent Approaches: Kalman and Particle

Kalman Filter Information Flow

Particle Filt...

Existent Approaches: Bundle Adjustment

Enough Number of Distinctive Features

Continuous Landmarks Observation and Permanent Structure

Wide Area with Small number of Useful Features

Repeated Landmark Features

Many Bumps and Stairs

Obstacles are Ruling in the Scene

SLAM algorithm (provides the reasonable level of localization in such environment)

Entire SLAM Process	Highly Distinguishable Feature
Mapping	Existent Approaches

You Choose

The goal of Challenge: Enable the given robot system to localize in DASL