Robot Localization

Frederike Dümbgen

Ecole polytechnique fédérale de Lausanne
frederike.duembgen@epfl.ch

I. Introduction

I. Overview

- overview picture (Lucidchart)

II. Experimental setup

- raspberry IP-CAM Setup of raspberry cam including button, and fixation Network-and wifi setup and streaming method
  - mics robot Mics type and communication setup
  - robot parameters setup etc.

II. Algorithms

I. Feature extraction

-> algorithms: color extraction contours circles

II. Geometric transformations

–> perspective transformation (2D/2D) –> experimental results
camera location, triangulation (2D/3D) DLT: fixed height/no fixed height (using SVD) RANSAC: not used.

Code 1: *Listing*

III. Odometry

assumptions, equation odometry.

Code 2: *Listing*

IV. Acoustic SLAM

Code 3: *Listing*

III. Experimental Results

I. Computer Viision

2D and 3D results maybe 3D Plot with lines to cameras etc.? reference point location 2D/3D number of reference points 4-6

II. Odometry

III. Acoustic-based SLAM

IV. Comparison