THE UNIVERSITY of EDINBURGH

Robotics: Science and Systems

Major Milestone 1 - Report

October 19th, 2016

Group 9 - Henrique Ferrolho and Jacob Longval

Design

- Two front wheels - using 5:3 gearing ratio
- Small pivot wheel at the front, connected to Hall input
- Steel ball caster at the back
- Two IR sensors at the front, slightly angled outwards
- Two whiskers at the front, covering the IR sensors blind angle

Control

- Reactive behavior:
  - Go forward
  - Use IR sensors to change direction
  - Listen to whiskers for imminent frontal collisions
- Detects and resolves when stuck in corner

Vision

- Constantly queries camera for frames at *medium* resolution
- Crops region of interest from frame
- Uses *SIFT* for *Feature Matching + Homography* to scan for **nearby** resources and identify them
- Filters frame based on HSV range, and calculates *centroids* of the *mask contours* to identify **distant** objects of interest