Two Dimensional Stereoscopic Mapping Robot

Henry Lovett, hl13g10

Supervisor: Prof. Steve Gunn

1 Project Brief

Many mapping robots exist which utilise laser or infrared range finders. I plan to research, design and build a robot which utilises two cameras to calculate the distance to an object in order to build up a 2 dimensional occupancy map of an unknown area. I am to complete my project in 3 milestones that are outlined below.

Basic Operations: Deadline 12^{th} December The first milestone will be to obtain basic functionality of all aspects: cameras, range finding, search algorithm, robot movement and mapping. All parts will be simple implementations intended to give basic results. Doing this should highlight any major problems early on in the project so that they can be acted on quickly. The interim report is also due on this date and will be done throughout the term.

Improved Operations: Deadline 16^{th} March Second major step will be to improve the algorithms, concentrating on the range finding and searching algorithm. These will be improved for accuracy and efficiency, making the robot quicker and returning better results.

Finalisation and Report: Deadline 1^{st} May The final amount of time before the hand-in date will be spent finalising the functionality of the robot and completing the report. No extensive alterations to the project will be done at this stage. If time allows, more advanced algorithms could be looked at, and better optimisations could be introduced.