The Guiabot

Welcome to the homepage of Guiabot

The mission:

Persistent Robotic Navigation: The goal is to have a robot that can learn how its environment changes over time so navigation performance remains stable.

During operating hours, the robot roams around greeting students, staff and visitors with its smiley face. The robot automatically returns to its recharging station when its battery level drops.

Experiments...

Experimentation involves the robot wandering around its environment matching what it observes to previous observations in order to work out, where it is, and how to get to its desired location.

Changes in the environment are remembered for future navigation. Changes might include, relocated bookshelves, tables, chairs and posters.

The robot operated for 2 months during business hours on level 11 S-Block and amongst the crowds that attended Robotronica 2013 (approximately 24,000 people in attendance). The robot currently operates on level 3 P-Block and inside the QUT Bookshop. See below for details...

Level 11 S-Block

The Guiabot initially lived on level 11 S-Block, QUT gardens point campus.

During experiments the robot operated each day for approximately 8 hours, covering an average distance of 2.8 km. These experiments were conducted without human supervision and therefore required some additional safety measures that make S-Block level 11 a unique environment.

In order to prevent the robot escaping via the lift or via the stairs, we modified the environment with magnetic strips beneath the carpet and retroreflective tape on the ceiling for areas around the lift, the stairwell and the firedoors. A hall effect sensor underneath the robot and an industrial retroreflective tape sensor provide redundant means of emergency stopping the robot, and it requires a key to restart. The robot also has bump sensors at the base and on its sides as well as a number of emergency stop buttons.

Level 3 P-Block and QUT Bookshop

The Guiabot recently named "Casper" by the QUT Bookshop staff, now roams the bookshop and outside cafeteria.

These experiments are designed to test Casper (the Guiabot) in a highly dynamic environment where efficient paths can change over time. The paths chosen by Casper under different modes of operation will be compared over a long period, along with
assessments of crowd density made by the human supervisor. This information will be used to measure navigation performance of a robot that adapts to its environment versus one that does not.

Instruction of interaction: