SCHOOL OF ENGINEERING
DESIGN OF A MAPPING ROBOT
FINAL YEAR REPORT

STUDENT'S NAME : LEE TEIK WEI
STUDENT'S ID : 99309312
MAJOR : B. ENG. (HONS) ELECTRICAL & ELECTRONIC ENGINEERING
FIRST SUPERVISOR : MR. GILBERT THIO
SECOND SUPERVISOR : MS. RUZITA ABU BAKAR
PROJECT'S COORDINATOR : DR. KHEDR M. M. ABOHASSAN

MAY-DECEMBER 2004

ABSTRACT

Robots and people use maps to orient themselves and to plan movement to different locations. Robots can be used to map remote areas that may be inaccessible or inhospitable to humans but in many cases a robot's sensor system is limited compared to people. This project employs an autonomous mobile robotic vehicle, coupled with a PC via a radio link to cooperatively explore an area and map obstacle and layout placement of the object. The mapping robot has limited sensor resolution and accuracy plus limited computational and storage resources so the PC will use to record mapping information and performs global planning. The mapping robot will make a rotation of 360 degrees to perform a scanning of the surrounding environment by using an ultrasonic sensor. The mapping algorithm that is used to determine what combination will generate a map that is close to the actual environment is Cartesian coordinate, Trigonometry system and Vector function. The wheel encoder from the "mouse" is used to track position and movement of the robot. The mobile robots also equipped with the infra-red sensor to enable a robot follow the wall when it detected the wall and for navigation purpose. The end result will be a map that can be displayed to the user. In order to produce the accurate map, the robot must navigate onto the flat surface area.