



FINAL YEAR PROJECT REPORT

IMPLEMENTATION OF SIMULTANEOUSLY LOCALISATION AND MAPPING ON MOBILE ROBOT

**In fulfillment of the requirement
For degree of
BEE (Electronics)**

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ABSTRACT

The objective of this project is attempt implementation of a renown map generation techniques of unknown environments by the name of "Simultaneous Localisation and Mapping (SLAM)" on a mobile terrestrial robot. This report elaborates the techniques and algorithms implanted to achieve the ultimate goal, that is, generation of a 3D map of an unknown environment. Different stages involving image acquisition and processing will be discussed.

The main components of the project are National Instrument's myRIO as an embedded platform and Microsoft Kinect as the imaging device both mounted on a terrestrial robot.

The first stage is the acquisition of the depth and colour image stream from Microsoft Kinect via myRIO on the remote robot. The data is then sent wirelessly to a base station where it is further processed. The processing stages involve features extraction from both the images, image stitching using features, image registration, generation of 3D point cloud. The robot is controlled from the base station.

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