

Minor Project

Unmanned Mapping Vehicle Using L.O.A.M.¹ in Real-time

Proposal, Technical Project

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¹ L.O.A.M. - Lidar Odometry and Mapping in Real-time

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1. Introduction

1.1. Problem Statement

Design an Autonomous IOT based 2D mapping device.

1.2. Background

Lot of manpower and resources are invested in surveying road,tunnels, sewages and all other areas which need mapping. To optimise this process we came up with a plan to make a device which will ease this process. Semi or fully autonomous.

2. Proposed Technical Approach

2.1. Features (Functions)

1. Given an Absolute point to the vehicle it should reach that point avoiding all the obstacles
2. Localizing itself automatically in an unknown place when given the map of that area
3. It can report back its state to a known host (through wifi or internet or bluetooth or any other media)

2.2. Architectural Design

Hardware:

- RPLidar
- IMU
- GPS
- UltraSonic
- Base with 4 Omni wheels
- IoT Connectivity (Wifi, Bluetooth, etc)

Software:

- Robot Operating System
- Rviz
- Gazebo

3. Expected Result

3.1. Measure of Success

(how are we going to verify that the project is successful)

The project will be successful when the map made by our device is verified by physical measurements .