Machine Learning Project Report on

"Autonomous Robot"

Submitted by

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Abstract

Internet of Things(IoT) is a growing field with technology escalating everyday. It is growing day by day due to its numerous advantages. Autonomous robot is one such example of this field. It is aimed to plot a map the environment with obstacles present and calculate the optimal and shortest distance from any start point to any finish point within the boundaries of the plotted map. The robot uses an A* algorithm to find the shortest path for the specified start and end points. We have devised our own map plotting algorithm which shall be discussed further in the paper.

Introduction

Automation is quickly catching eyes and is now no longer a part of machinery anymore. It is getting involved in our daily lives. Automation is programming a computer to make machine not only perform but also regulate the task assigned to it. Automation has evolved from just being used as a part of industry and now is being incorporated in houses.

The “Internet of Things” –IoT, is a new, dynamic and distributed network system. This system consists of several components and sensors, which communicate and interact either among themselves or with the user. Home automation is now a part of IoT.

Methodology

A* algorithm has been used in order to find the shortest path for the given set of start and finish points. It is a pathfinding an graph traversal algorithm used for plotting efficient traversal path between multiple points.

Snapshot of the path calculated by the algorithm and traversed by the robot.

Here,

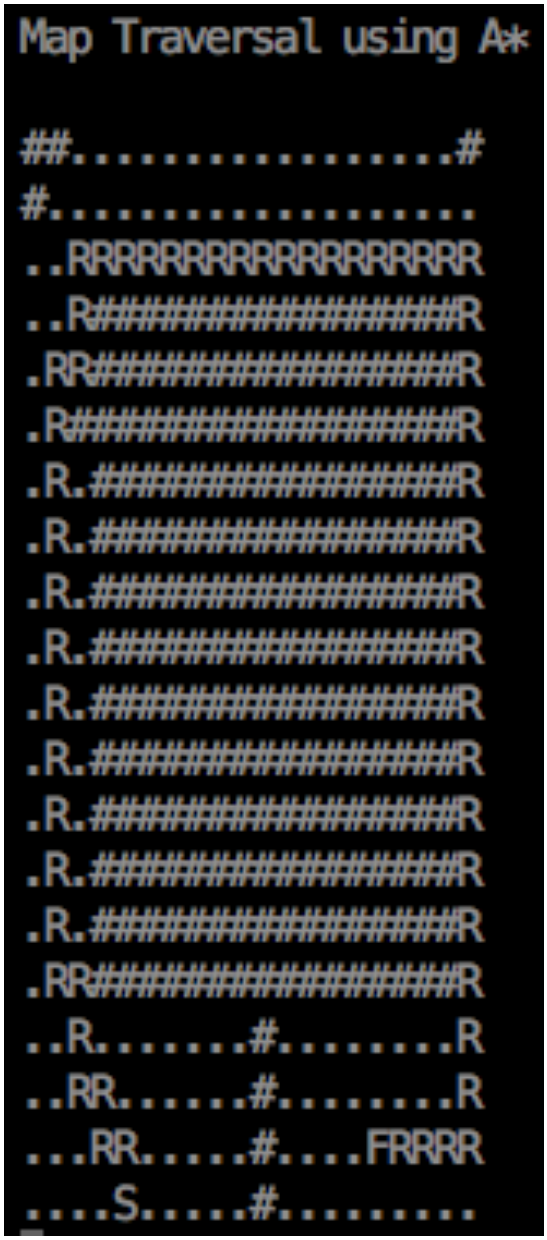
R: path of the robot

#: Obstacle

S: starting point

F: finish point

.: points were bot can move



Map Plotting Algorithm:

#: Obstacle Detected

?: Uncharted area

B: Bot

.: Map

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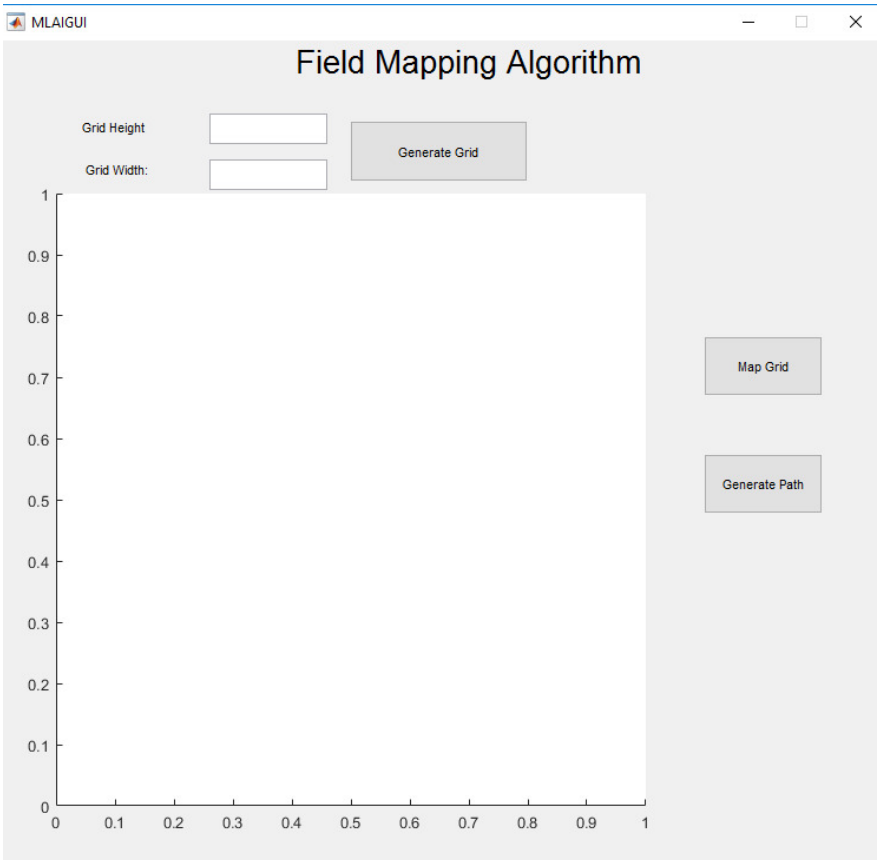
Results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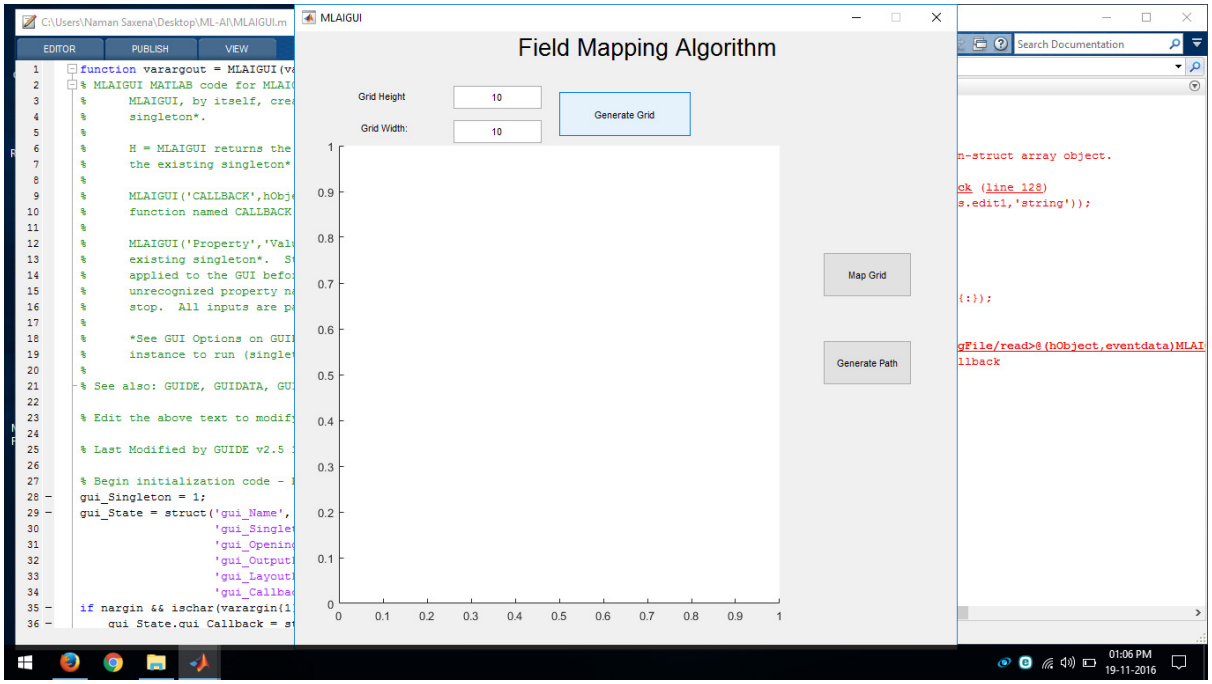
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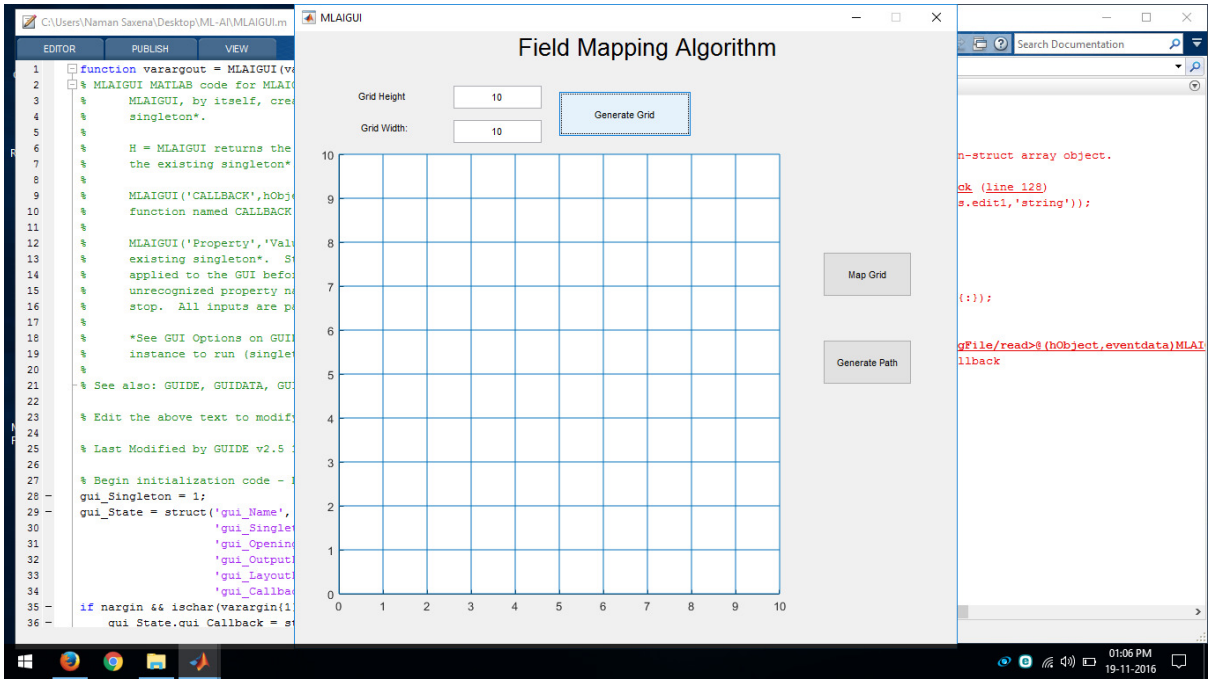
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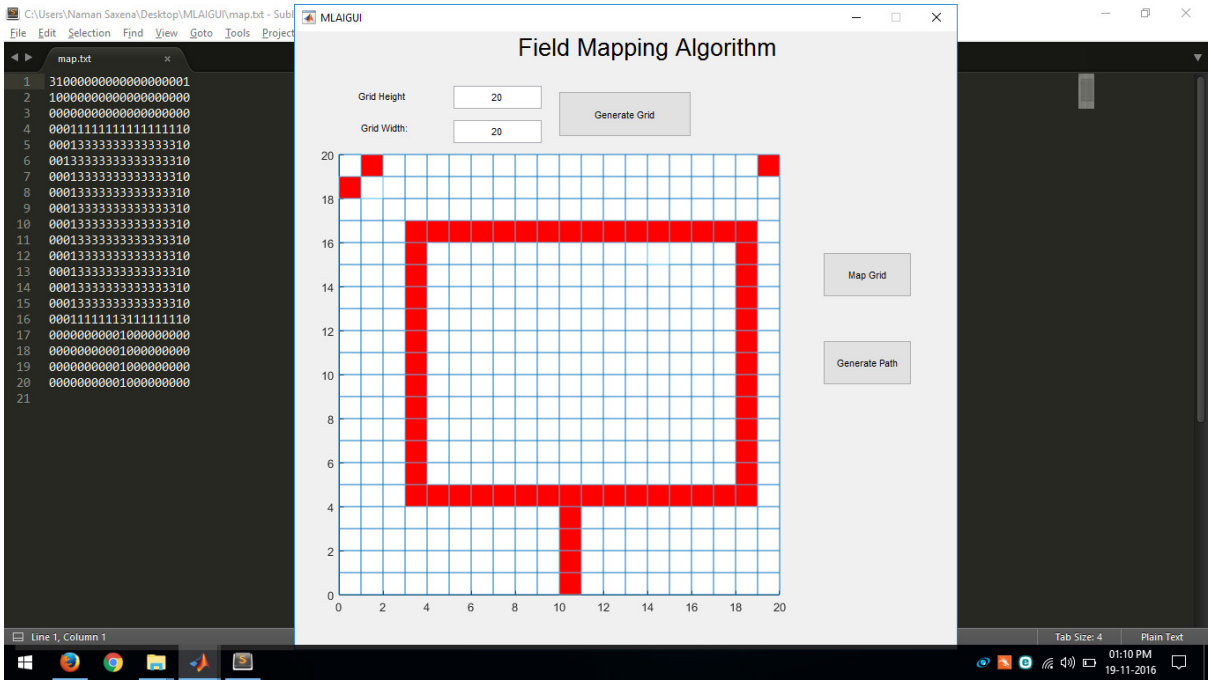
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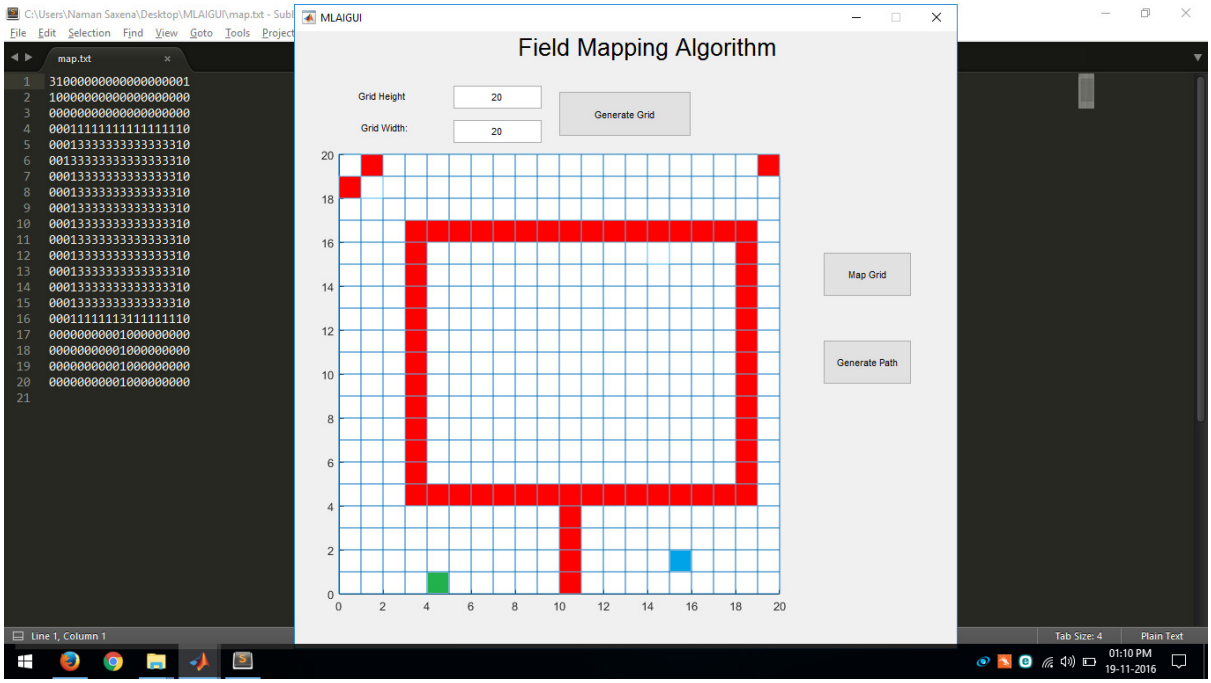
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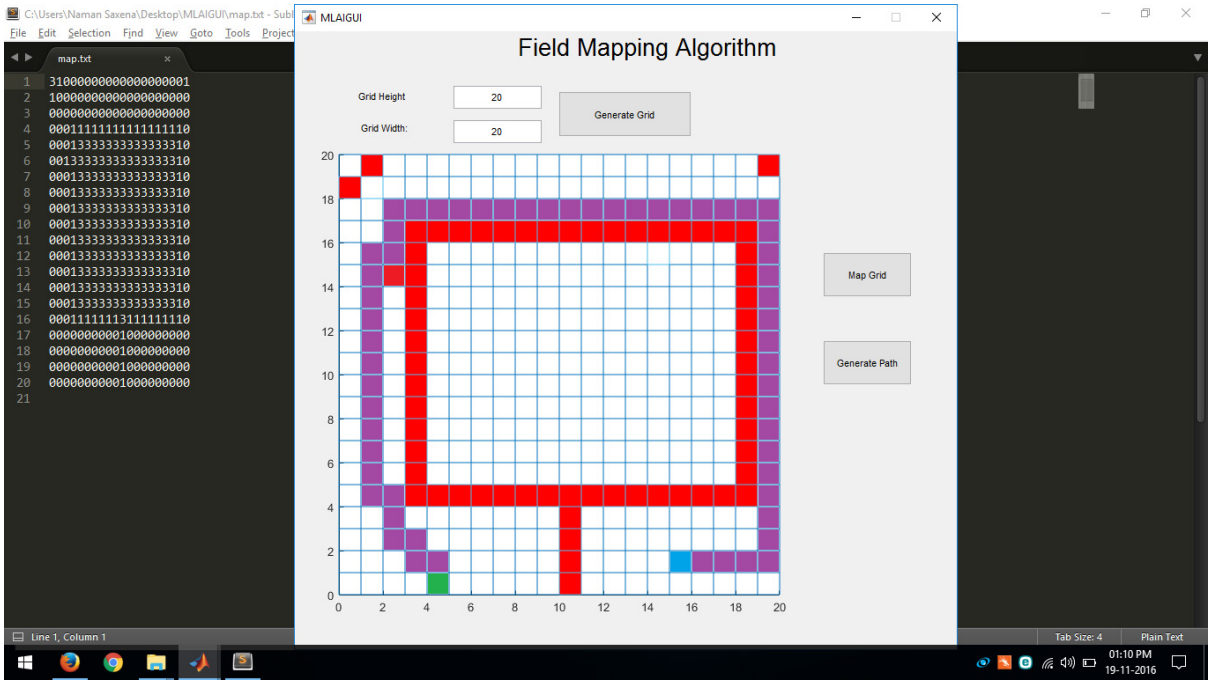
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