ENPM - 661

PLANNING FOR AUTONOMOUS ROBOTS

Project - 1

8-Puzzle Problem

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Class: Robotics-Spring 2019

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Batch 2020

Steps to Run the program

Python Modules:

The following modules are used in the program

1)numpy
2)time
3)sys
4)collection
5)math
6)copy
7)string
8)keyword

Install all the above mentioned modules in the **python3** version for running the program. Atleast the 'numpy' module need to be installed with python3.

Run Steps:

If you are running in the **Ubuntu version 16.04**:

- Install python-3
- Install all the above mentioned modules in the **python3** version for running the program. Atleast the 'numpy' need to be installed with python3.
- Run the 'Prasanna_Project1.py' file
- Then give the input node values checked (Eg: 2<space>3 <space>5 <press enter >4 <space> 6 <space>1<press enter>0<space>8<space>7) in output console.
- Then press 'Enter'.
- The program will run and shows the output data including "Number of nodes", "Node Path" and "Success or No solution" and "Time of execution"

in the output console.

- The files ‘Nodes.txt’, ‘nodePath.txt’ and ‘NodesInfo.txt’ will be generated in the same folder where this ‘Prasanna_Project1.py’ is existing.
- The ‘nodePath.txt’ in the Matlab visualization code to visualize the node block movement in GUI.

If you are running the code in **pycharm IDE:**

- Run this python program through python 3.7 version with numpy installed in it.
- Run the ‘Prasanna_Project1.py’ file
- Then give the input node values checked (Eg: 2<space>3 <space>5 <press enter >4 <space> 6 <space>1<press enter>0<space>8<space>7) in output console.
- Then press ‘Enter’.
- The program will run and shows the output data including ”Number of nodes”, “Node Path” and “Success or No solution” and “Time of execution” in the output console.
- The files ‘Nodes.txt’, ‘nodePath.txt’ and ‘NodesInfo.txt’ will be generated in the same folder where this ‘Prasanna_Project1.py’ is existing.
- The ‘nodePath.txt’ in the Matlab visualization code to visualize the node block movement in GUI.

Notes:

- The node arrays are converting to string in order to enable the faster computation.
- The Maximum time for code execution is 20 minutes.
- When the input node cannot be resolved to reach the Goal node then “No Solution” will be printed in the output console or when the maximum executable time of 20minutes is crossed then also the “No Solution” will be printed at the output console.
- ’nodePath, text file contains all the nodes in the path to reach the goal

node.

- ’Nodes’ text file contains all the explored nodes.
- ’NodesInfo’ text file holds all the information as expected including “Node id#, Parent node id#, Cost2Come (Number of Steps) ”

“Please contact me if you face any difficulty in running the program”