East West University

Department of Computer Science and Engineering

ASSIGNMENT REPORT

Course Code:CSE366

Course Title: Artificial intelligence

Section: 04

Lab Number: 01

Assignment Name:

Enhanced Dynamic Robot Movement Simulation

Date of Submission:

Submitted To: Dr. Md. Habibur Rahman.

SubmittedBy: Group 6

Name	ID
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Introduction:

Briefly introduce the problem of path finding in a grid environment with obstacles and the goal of finding the most efficient path from a start point to a goal point.

Problem Description:

Describe the grid environment, including the layout with obstacles represented by 1 and free space represented by 0.

Explain the agent's starting position (start) and the goal position (goal).

Algorithms:

Explain the two algorithms used for path finding: Uniform Cost Search (UCS) and A* search.

Describe how each algorithm works, including how nodes are expanded, the priority queues used, and the heuristic function used in A* search.

Implementation Details:

Provide a summary of the Python code provided, highlighting the classes (Node, Environment, Agent) and their methods (actions, result, uniform_cost_search, a_star_search, etc.).

Explain the role of each class and method in the path finding process.

Results:

Present the results of running both algorithms on the given grid environment.

Show the solution paths found by each algorithm, along with the number of times the agent had to recharge its battery (recharge_count).

Comparison:

Compare the performance of Uniform Cost Search and A* search based on the recharge counts.

Discuss which algorithm performed better in terms of efficiency and effectiveness.

Visualization:

Include visualizations of the grid environment with the solution paths overlaid.

Provide visual evidence of the paths found by each algorithm.

Conclusion:

Summarize the key findings from the assignment, including the performance of the algorithms and any insights gained.

Reflect on the challenges encountered and potential areas for improvement or further exploration.