**VIETNAM NATIONAL UNIVERSITY**

**HO CHI MINH UNIVERSITY OF SCIENCE**

**FACULTY INFORMATION TECHNOLOGY**



**PROJECT 01**

**SEARCH**

TEAM MEMBERS

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**Course: Introduction to AI**

**Ho Chi Minh City – 2020**

**VIETNAM NATIONAL UNIVERSITY**

**HO CHI MINH UNIVERSITY OF SCIENCE**

**FACULTY INFORMATION TECHNOLOGY**



**PROJECT PACMAN GAME**

**| TOPIC |**

**| LECTURERS |**

Mr. Le Ngoc Thanh

Ms. Ho Thi Thanh Tuyen

Ms. Nguyen Ngoc Thao

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Regards,

Team Representative,

Trang

Pham Ngoc Thuy Trang

# ASSIGNMENT PLAN

* **PREPARATION**

**Pseudo Maze for Level 1 and Level 2**

|  |  |  |
| --- | --- | --- |
| **Maze** | **Size** | **Description (with end/exist node is the position of food)** |
| 1 | 7x7 |  |
| 2 | 9x9 |  |
| 3 | 12x12 |  |
| 4 | 14x14 |  |
| 5 | 10x10 |  |

**Basic Workflow**

* **PLAN FOR EACH LEVEL**

**Level 1**

We will implement and compare between 5 search algorithms includes: UCS, IDS, BFS, DFS, GBFS, A\* to find which search is the best for Pacman at level 1 to find food with the minimum finished time and has the shortest path. In this level, there is only one food in the map. Pacman know where the food’s position is.

|  |  |  |
| --- | --- | --- |
| Algorithm | Finished time | Length of path |
| UCS |  |  |
| BFS |  |  |
| IDS |  |  |
| DFS |  |  |
| GBFS |  |  |
| A\* |  |  |
| **Overall** |  | |

**Level 2**

We will implement and compare between 5 search algorithms includes: UCS, IDS, BFS, DFS, GBFS, A\* to find which search is the best for Pacman at level 1 to find food with the minimum finished time and has the shortest path. In this level, there is only one food in the map and we also have monsters in the place ever, however, monsters won’t move around so we can see them like walls of the map. Pacman know where the food’s position is.

|  |  |  |
| --- | --- | --- |
| Algorithm | Finished time | Length of path |
| UCS |  |  |
| BFS |  |  |
| IDS |  |  |
| DFS |  |  |
| GBFS |  |  |
| A\* |  |  |
| **Overall** |  | |

**Level 3**

We will implement and compare between 5 search algorithms includes: UCS, IDS, BFS, DFS, GBFS, A\* to find which search is the best for Pacman at level 1 to find food with the minimum finished time and has the shortest path. In this level, there are many foods in the map so our mazes will be changed, and Pacman cannot see the foods if they are outside Pacman’s nearest. Each step Pacman go, each step Monsters move.

|  |  |  |  |
| --- | --- | --- | --- |
| Algorithm | Finished time | Length of path | Number of eaten food |
| UCS |  |  |  |
| BFS |  |  |  |
| IDS |  |  |  |
| DFS |  |  |  |
| GBFS |  |  |  |
| A\* |  |  |  |
| **Overall** |  | | |

* **UI FOR GAME**

# ENVIRONMENT

What we use for our project are:

* **IDEs**: Visual Code, Vim
* **Programming language**: Python
* **Outsource Platform for Python**: Anaconda
* **Version Control System:** Git (using GitHub to store projects and teamwork).
* The primary branch is branch “master” and parallel to this branch is another branch called “dev”.
* When the team’s source code in the “dev” branch reaches a stable point and is ready to be released, all of changes will be merged back into “master” branch.
* Members will also have their own branch which is named after their name. These branches are used for edit/delete/update their functions….

# ESTIMATE THE DEGREE OF COMPLETION LEVEL

**ESTIMATE THE DEGREE OF COMPLETION FOR EACH LEVEL**

|  |  |  |  |
| --- | --- | --- | --- |
| Level | What have done | What have not  done yet | Issues |
| **1** |  |  |  |
|  |  |  |
| **2** |  |  |  |
|  |  |  |
| **3** |  |  |  |
|  |  |  |
| **4** |  |  |  |

**OVERALL ESTIMATE**

|  |  |  |
| --- | --- | --- |
| Level/Tasks | Is Complete/Is not Complete? | Rating |
| 1 |  | **/15** |
| 2 |  | **/15** |
| 3 |  | **/10** |
| 4 |  | **/10** |
| At least 5 maps with different in number and structure of walls, monsters, food |  | **/10** |
| UI for Game |  | **/10** |
| Report |  |  |
| **Overall** |  | **/100** |

# REFERENCES

[1]: Artificial Intelligence – A Modern Approach 3rd Edition Russel and Peter Norvig

[2]: