***COSC1125/1127 Artificial Intelligence***

***Project 4, 2018***

***Contest: Pacman Capture the Flag***

***Report***

***Team name -- hopedreamer***

***Team member:***

***s3569974 Ning Nan***

***s3512592 Chao Geng***

***s3558075 Yang Ding***

**Introduction**

<-- Assignment overview -->

<-- expectation of agents -->

<-- possible methods to create agents -->

<-- expectation of results -->

The purpose of this project is to implement a Pacman Autonomous Agent that can play and compete in the Pacman Capture the Flag tournament. In order to get a good result of the tournament, we will give our agent the ability of offence as well as defense which are based on AI techniques, and our agents will have the ability to determine whether it is a good time to attack or defense based on different situations. For our offensive agents, we will give them the ability to find and eat food from opponent’s side without been caught by opponent’s pacman and bring the food back to get score. For our defensive agents, we will give them the ability to defense any incoming opponents, and protect our foods. There are a lot of methods available for us to implement pacman agents that have the ability we desired. After our discussion, our team decide to build a mixed agent based on Approximate Q learning method and minimax method.

**Type of techniques used**

Mix agents

* Offensive agent

Approximate Q Learning method

<-- more explanations required -->

<-- explain what is approximate Q learning method-->

<-- advantage -->

<-- disadvantage -->

<-- reason to use -->

* Defensive agents

Based on minmax method, idea from multiagent assignment

<-- more explanations required -->

<-- explain what is minimax method-->

<-- advantage -->

<-- disadvantage -->

<-- reason to use -->

**Design decisions**

Concepts of design

<-- May follow bit comments and explain in detail -->

<-- Starting idea -->

<-- Building agent structure -->

<-- **Approaches taken, include discard approaches** – explain in detail -->

<-- **Challenges experiences** – explain in detail -->

<-- Fix challenges-->

<-- Unfixed Challenges and why -->

**Possible improvements**

<-- what are the possible disadvantage of our agents-->

<-- What could be done better-->

**Experimental section**

justifies and explains the performance of the approaches implemented

<-- Local experimental results-->

* Result 1
* Improve agent
* Result 2
* Improve agent
* Result 3
* Improve agent

……….

<-- Contest results from teacher -->

* Result 1
* Improve agent
* Result 2
* Improve agent
* Result 3
* Improve agent

……….

**Final conclusion**