**Hands-on Assignment 10**

**Due Date: See web**

Use Q-Learning to create a program that can play Tic-Tac-Toe with a human player.

The basic code for Tic-Tac-Toe is given. What you need to do is to finish the missing part of QLearningPolicy in the policy.py file, following the documentations and comments given. Your implementation should be able to directly replace the RandomPolicy in the two main scripts, and good enough to win human player (if a human player makes mistake) or draw every time. Watch the video for more details.

## Usage

To run the game with an agent using random policy, which chooses a random available position, and put mark there. run

python main.py

for a terminal interface, run

python main\_gui.py

and select Random as your opponent for a graphic interface. You will need the PyQt5 library to support it. To install it, run

pip install PyQt5

After you have finished the q-learning policy, you can run

python main.py -p QLearningPolicy

or run

python main\_gui.py

and select QLearning as your opponent for the graphic interface.

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## Submission

Please submit your policy.py file together with your saved table file in a zip file in canvas submission page. Finish it by yourself, there is no tolerance for plagiarism.

Similarity penalty will not be applied to this assignment. However, the Turnitin report will be used as clues for manual plagiarism detection.

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