**Visualizing a Self-Learning Agent to Play Pong Game**

**1)** **create a Pong Game application in Java that allows**

a) human playing against machine / interaction (Playing with Mouse and/or Arrow Keys)

b) machine playing against machine

**2)** **Please Note:**

a) There are plenty libraries, so it is very unlikely that you need to implement the basics yourself.

b) the main complexity of this task is implementation of the **pong game** and **visualization**

**3)** **Requirements:**

a) train your self-playing agents using at least 2 different algorithms

i) i.e. (Machine Learning, Evolutionary Algorithms, Reinforcement Learning with Deep Neural Network, Reinforcement Learning with Shallow Neural Network, …)

b) visualize the complete learning process

**i)** **your machine performance improvement over time is clearly displayed and we can see the interactions in each game**

ii) is to ensure that you are not going to use any simple deterministic algorithms

iii) display how your agent’s performance improves over time

iv) The process consists of multiple games

v) In each game, you can see the interactions

vi) on the left and the statistic on the right.

(1) i.e. On the right, there is a small graph changing after every game, showing the performance improvement of your agent over time.

c) GUI - the GUI must ask the user what he or she would like to do

i) If the user wants to play himself, the program must let him choose one of the trained agents to play with

ii) If the user would like to see how the agents are trained, the program must visualize the whole learning process of the chosen agent.

iii) Otherwise, the program will display a game between trained agents playing against each other.