MINECRAFT LEARNS ML TUTORIAL
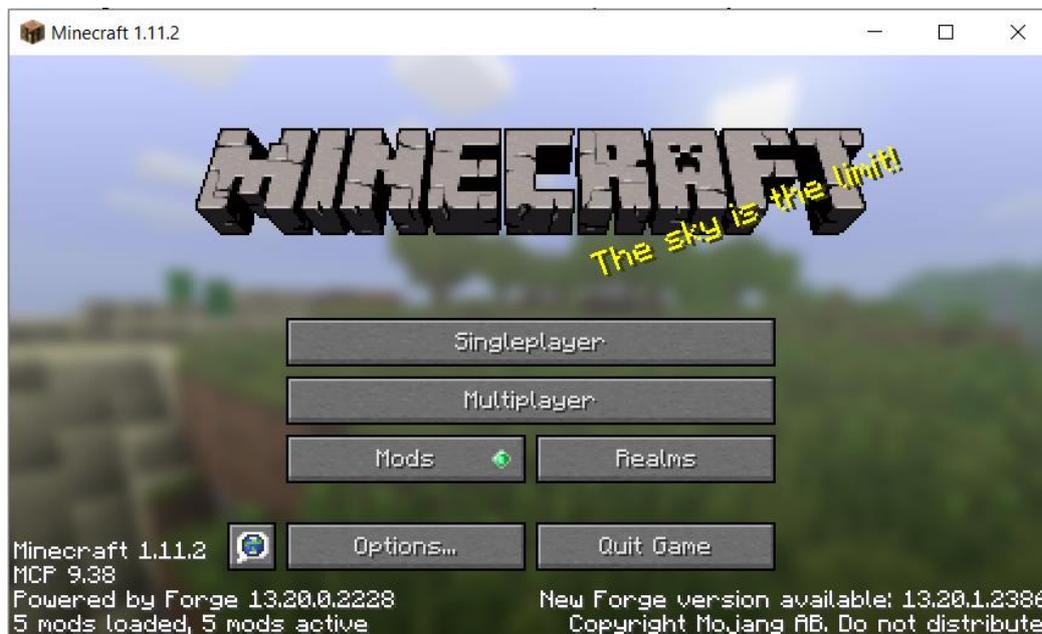
1) Install Project Malmo

NB: Project Malmo requires a 64-bit CPU, 32-bit CPUs are not supported

Please follow these instructions to install *Project Malmo*:

1) Download Project Malmo at this [link](#)
2) Extract the contents to a directory (E.g., Desktop)
3) Go to "Desktop/Malmo-0.36.1-Windows-64bit_withBoost_Python3.6\Malmo-0.36.0-Windows-64bit_withBoost_Python3.6\scripts"
4) Double click on "**install_java.bat**"
5) Go to "*Desktop/Malmo-0.36.1-Windows-64bit_withBoost_Python3.6\Malmo-0.36.0-Windows-64bit_withBoost_Python3.6\Minecraft*"
6) Double click on "**launchMinecraft.bat**"
7) This will download Minecraft and after the installation you should see the following:
8) Do not press any button

2) Install LearnML_Minecraft

You can get the latest version of *LearnML_Minecraft* from google drive at this [link](#).

Now that everything is ready, let's play the game!
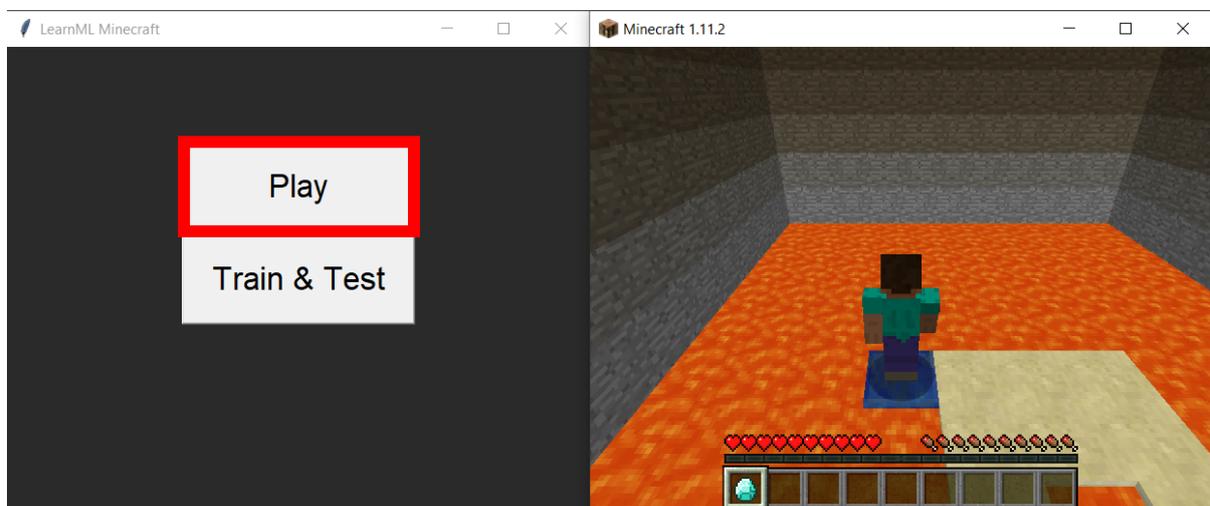
PLAYING THE GAME

First, we're going to collect data from Minecraft. We will first play ten times a simple maze level with our agent and then train a neural network to learn to imitate our play style!

COLLECTING DATA

[NB: First check that Minecraft has started successfully, and please do not press any button in the Minecraft window]

Please extract the zip file downloaded (*LearnML_Minecraft.zip*) in a directory of choice and open the folder named "*Minecraft_LearnML*".
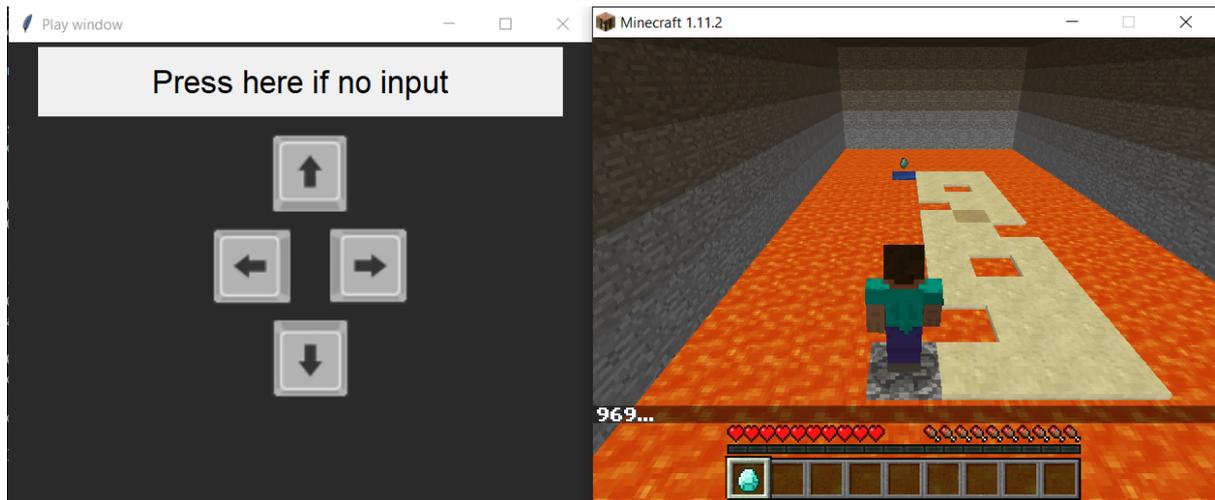
Then double click on the executable called "*Minecraft_LearnML.bat*":

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To collect the data necessary to train our agent, we first need to play a simple level.

The level is a simple maze where the objective is to reach the blue square without falling into the lava surrounding the level.

To play the level, please click on play and the following screen will appear:

To control the agent please use the four directional arrows on your keyboard.

NB: in case the "Play window" loses the focus and the agent doesn't receive any input, please click on the "Play window".

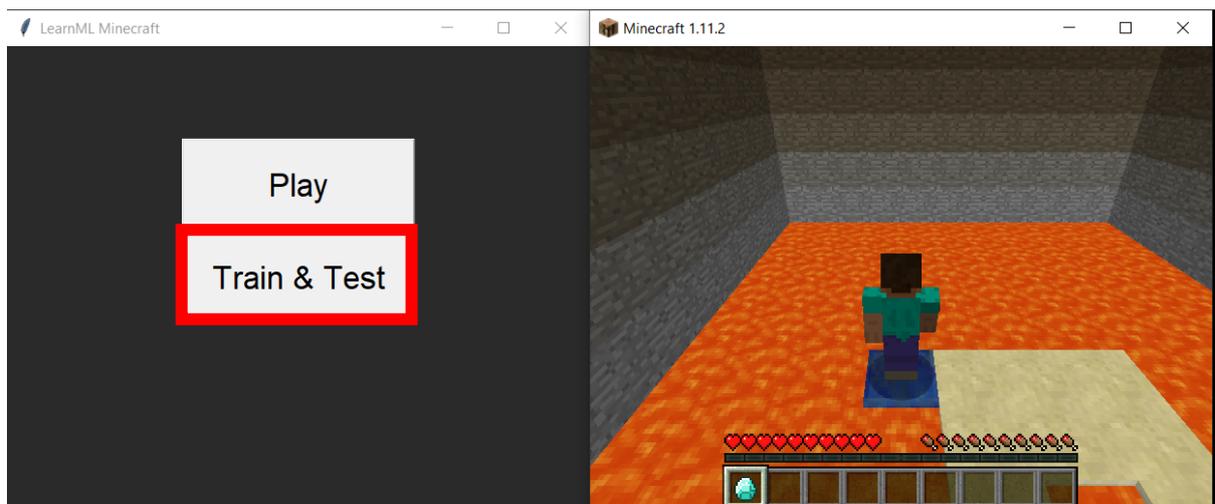To collect enough examples to train our agent, we need to play the level 10 times.

After each try, whether you manage to reach the blue square or fall in the lava, the level will restart automatically. After 10 tries, the data collection is completed and the play screen will disappear.

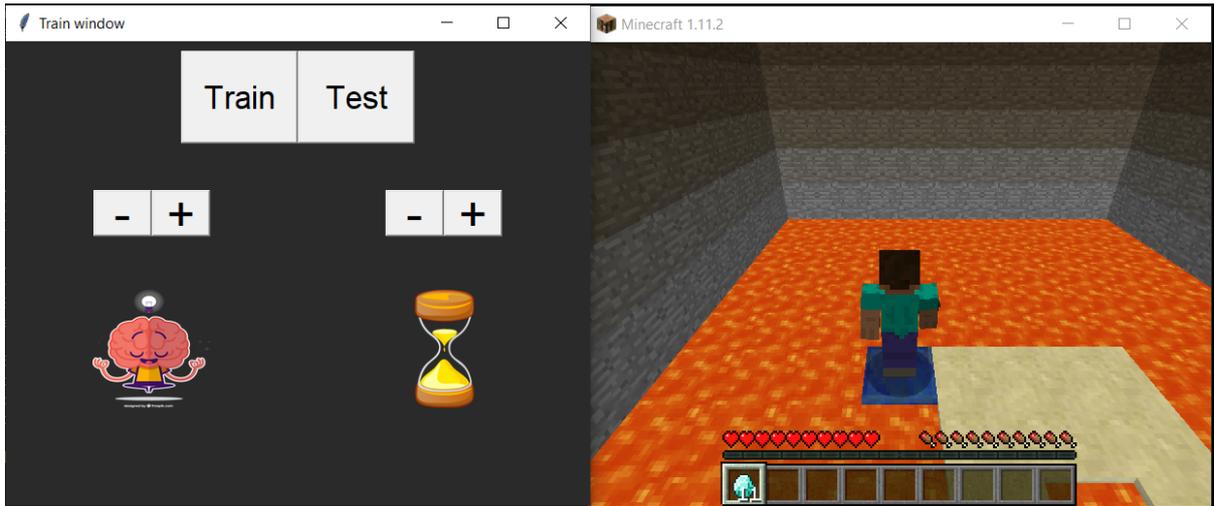We are finally ready to train our agent!

LET'S TRAIN OUR AGENT!

Now that we collected enough data for our agent, we can train our agent to imitate our playthrough to solve the level.
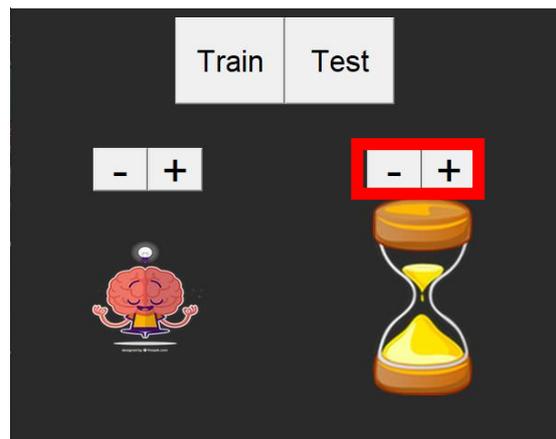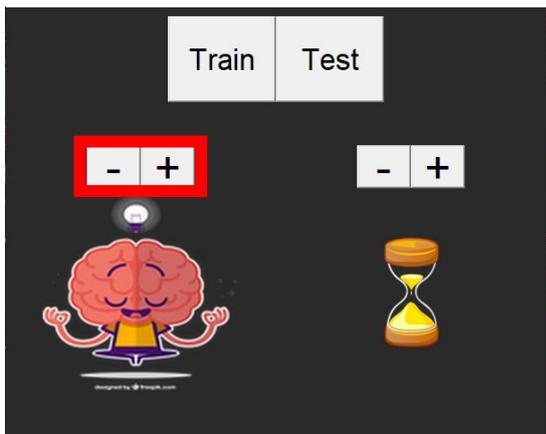
First click on "Train & Test" button:

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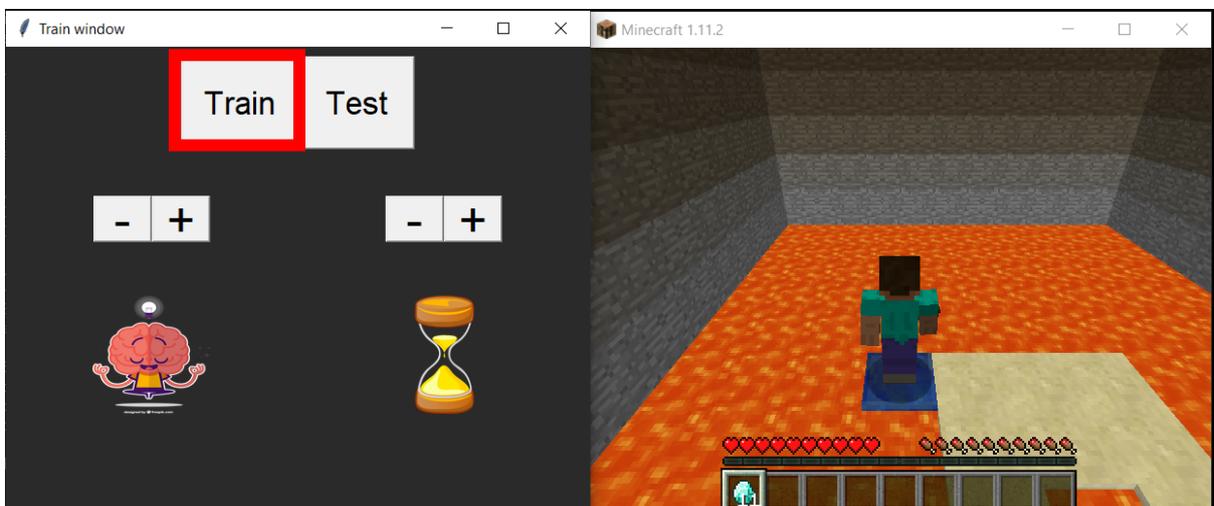After this, the following window will appear:

First, we need to decide how big is the agent's brain and for how long we want to train our agent.

In order to do so, we can change the size of the brain by clicking on the "+" and "-" buttons on the left, while we can change the training time by clicking on the "+" and "-" buttons on the right:
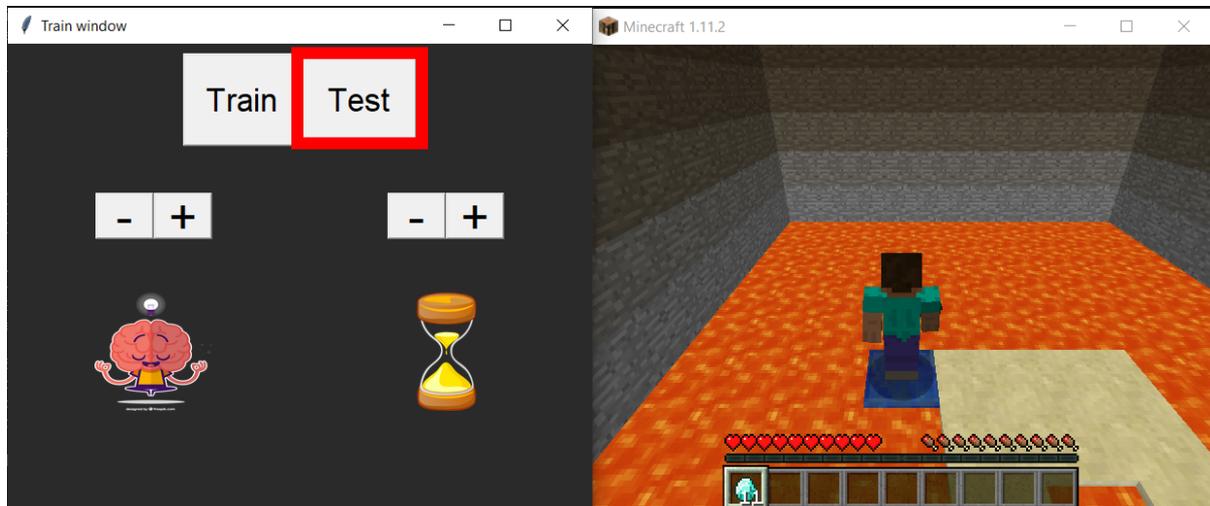

Once the brain size and the training time has been decided, click on the "Train" button to train our brain with the data collected from the previous playthroughs:

A small "training" window will appear and after a couple of minutes our trained agent will be ready to be tested.

To test the trained agent, press the "Test" button:

You will see your agent trying to solve the maze. However, based on the size of the brain and training time chosen, it might fail to find the solution.

But don't worry! You can try again by increasing either or both the size of the brain and training time!

Good luck!

Pro-gamer challenge:

Try to find the smallest brain and the shortest training time to solve the maze.