SUPER MEAT BOT TUTORIAL

Super Meat Bot is a game about teaching robots to play games for you!

INSTALLING

1) You can get the latest version of Super Meat Bot from google drive at this link.

2) Extract the *PlatformGame.zip* content to a directory (e.g., *Desktop\PlatformGame*)

3) Install **Tiled**, by using the following link:
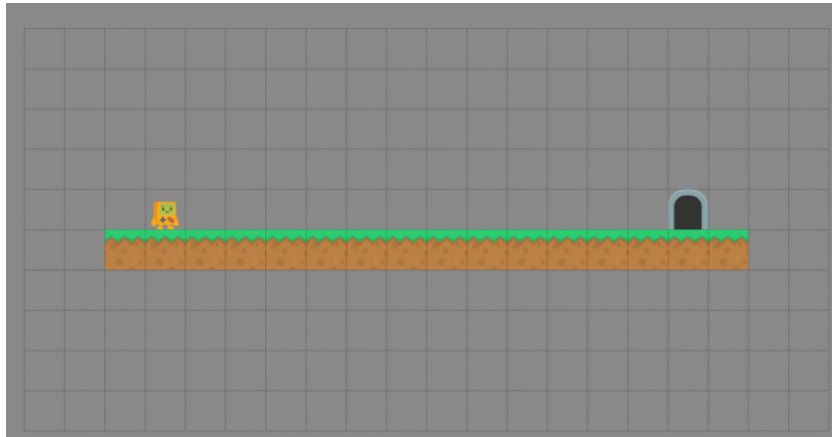
https://www.mapeditor.org/download.html

PLAYING THE TUTORIAL

First we're going to look at a simple level that is already solved, then you'll have a go at the game.

JUST GOING RIGHT

In *Tiled*, open "**PlatformGame\Data\Test\goal1.json**"

This is our goal level. We'll need to teach our bot to complete this. But how?

In *Tiled*, open **PlatformGame\Data\Train\Tutorial\Goal1Solution\run_right.json**


We will use this level to train the bot to run right so that it can complete the level above. Using this smaller level will train the bot much faster and much more reliably than using the goal level alone. The bot will move randomly at first, and will receive a reward when it collects a diamond and when it completes the level.

This trains more reliably because the agent is more likely to randomly gather rewards. Once the agent is gathering **any** rewards it can then shape its behaviour to gather those rewards more effectively. In the larger level it is less likely to gather any rewards, so it cannot shape its behaviour towards gathering those rewards.

Let's test whether this training set is enough to complete the whole level. In *Windows Explorer*, go to the PlatformGame root folder, and then double click on "**run.bat**"
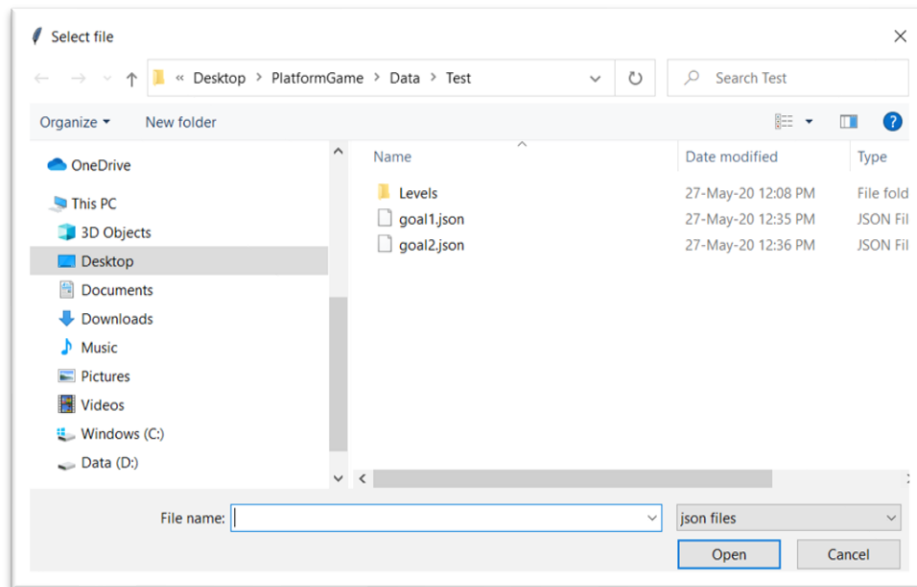
You will see a *GUI* appearing:
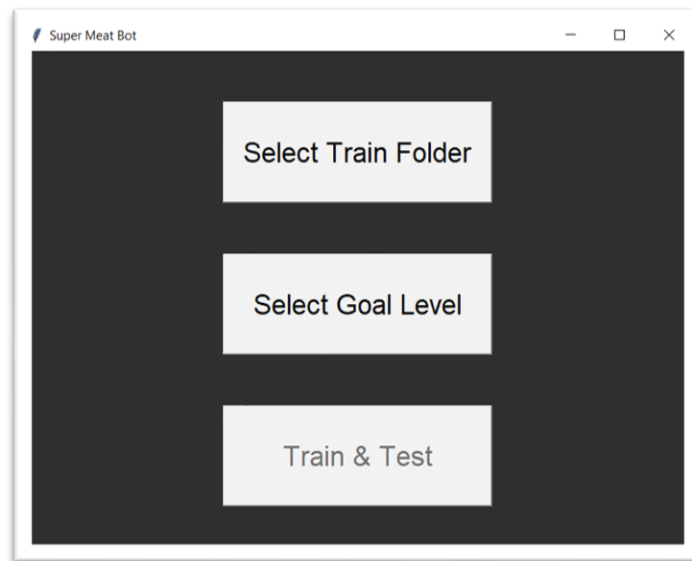
First press on "**Select Train Folder**" and select the folder named "**Goal1Solution**":
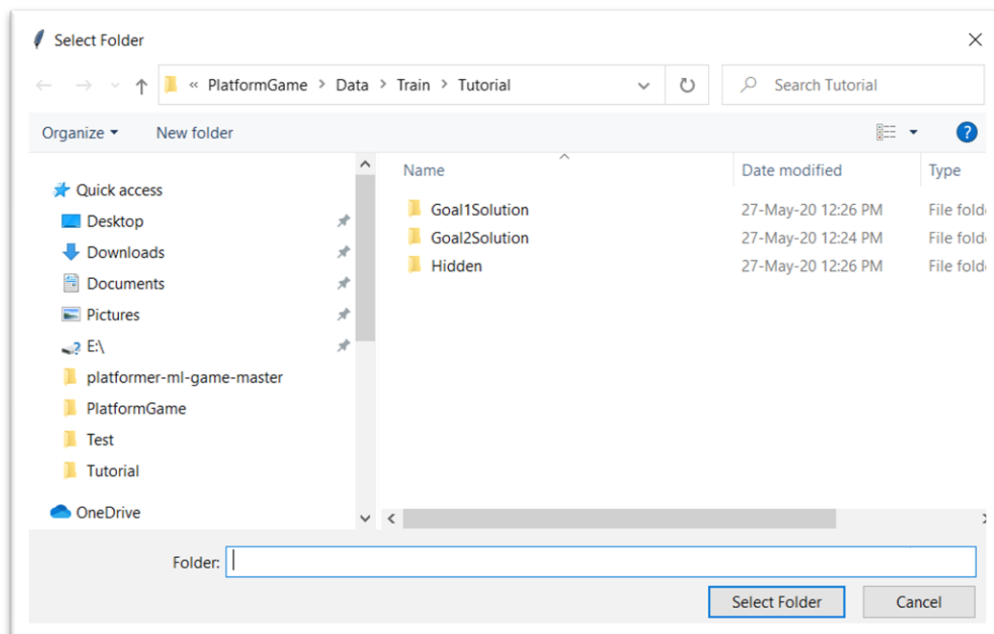
Then press on "**Select Goal Level**" and select the file named "**goal1.json**":


Finally, press "**Train & Test**".

Shortly after you will see the agent attempting one of your levels with no skill at all! With our training set and the small target behaviour (just run right), it should learn very fast how to play. We'll only let it train for 15 runs, which is about 30 seconds. Once it's trained, we will see it attempting the goal level, and then we'll get a report on how well we did.

It seems we did a great job teaching this bot how to just go right! He managed to reach the exit without falling off 100% of the time (indicated by the Win Rate at the top).

As before, open up the goal level in *Tiled*– this time it is "**PlatformGame\Data\Test\goal2.json**".
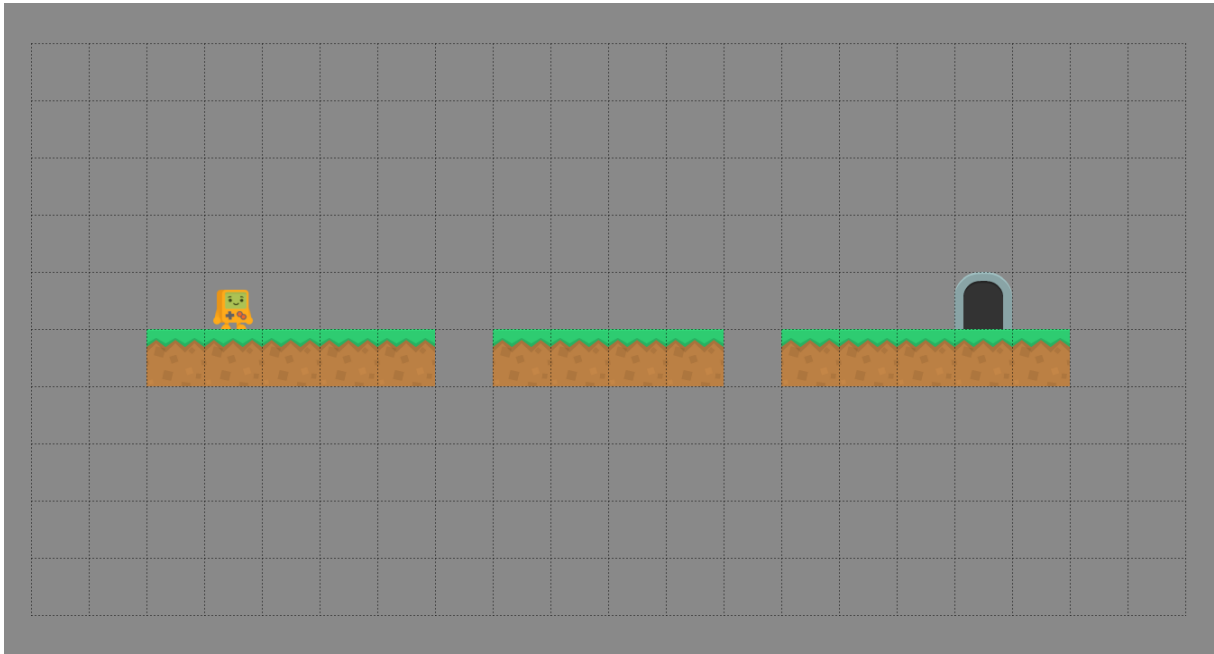
This level is similar to the previous one, except there are some gaps to jump over.

We should train the bot that it should move right, just like the previous example. We should also train them to jump over the little gaps. This splitting out problems out of the level will be a core part of training our bot for any level we come up against.

To create our training set we need to create a new map. In Tiled, create a new map using *File →New →New map.* Use the same settings as below to configure your map:
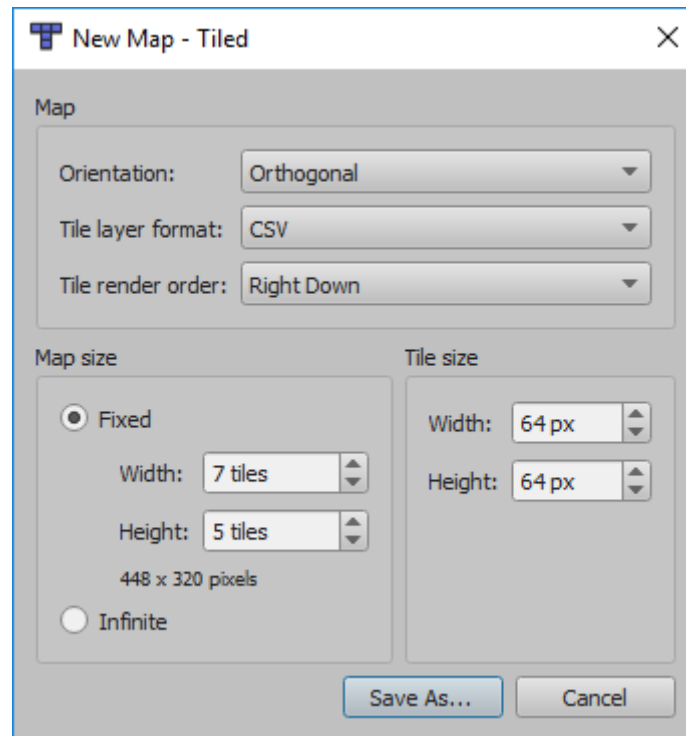
Click "Save As…" and navigate to "**PlatformGame\Data\Train\Tutorial\Goal2Solution**".

You should save it as a .json file. You can save the file with any file name and this will not affect training, so long as it is a .json file it will be picked up.
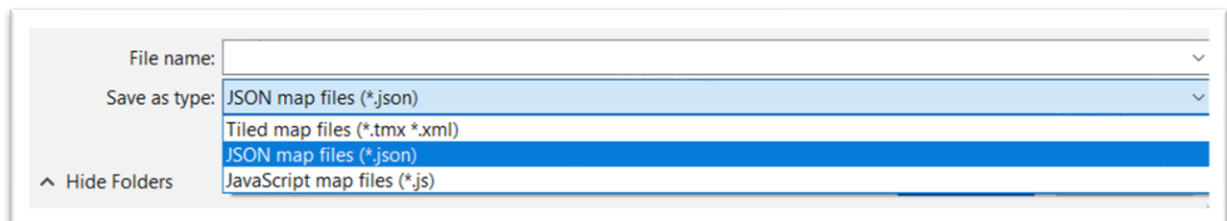
Create as many levels as you want and save them in that same folder. Once you're happy with your selection you can train them by using the *GUI*: select "**Goal2Solution**" folder with "**Select Train Folder**" button and select **"goal2.json"** with **"Select Goal Level"** button.

You'll start seeing your bot learning from your training levels. After 25 runs, they will attempt the goal level. You will see some of the attempts and the end of game result. If the training levels teach the bot the skills to complete the goal level you will get a high win rate, anything over 75% is impressive. Good luck!

TIPS

Try to solve this on your own, but if you do get stuck check out these tips.

- Split the different skills out of the goal level and create a training level for each one. In the tutorial, there are two "skills":
  - Run right

- o   Jump over one-wide gaps
- The bot looks around itself and bases its actions on what it sees. In the goal level the platform is 1 thick, so you should make your training level platforms one thick so you don't confuse your bot
- If the bot won't learn no matter what levels you try, you can get a solution training set from "**PlatformGame\Data\Train\Tutorial\Hidden**"

NEXT STEPS

You can try the other main game levels. These levels will take longer to train but you'll have a more impressive bot at the end of it!

These are stored in the **"PlatformGame\Data\Test\Levels\"** .