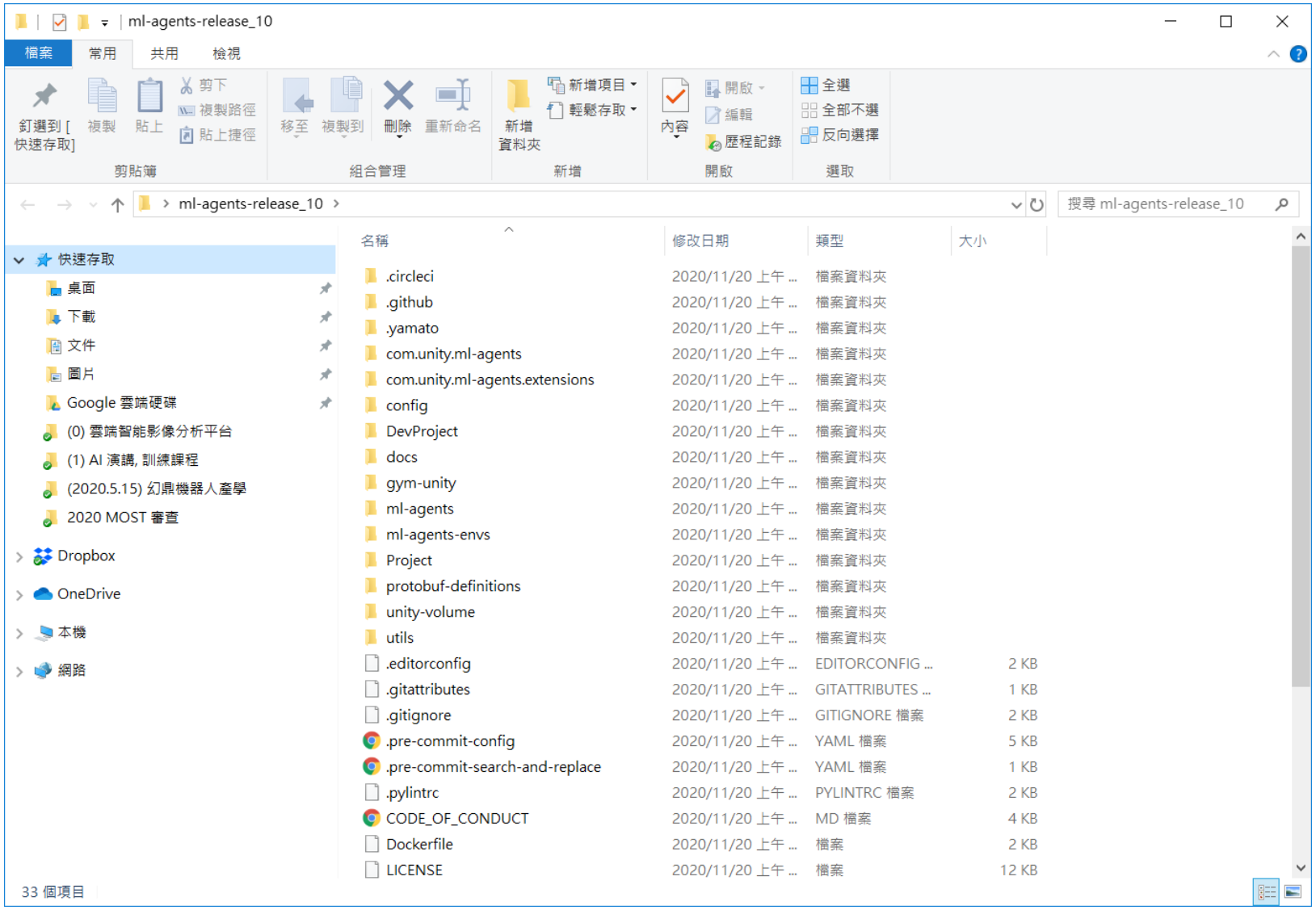
1. Download ML Agent Release 10 or later from GitHub

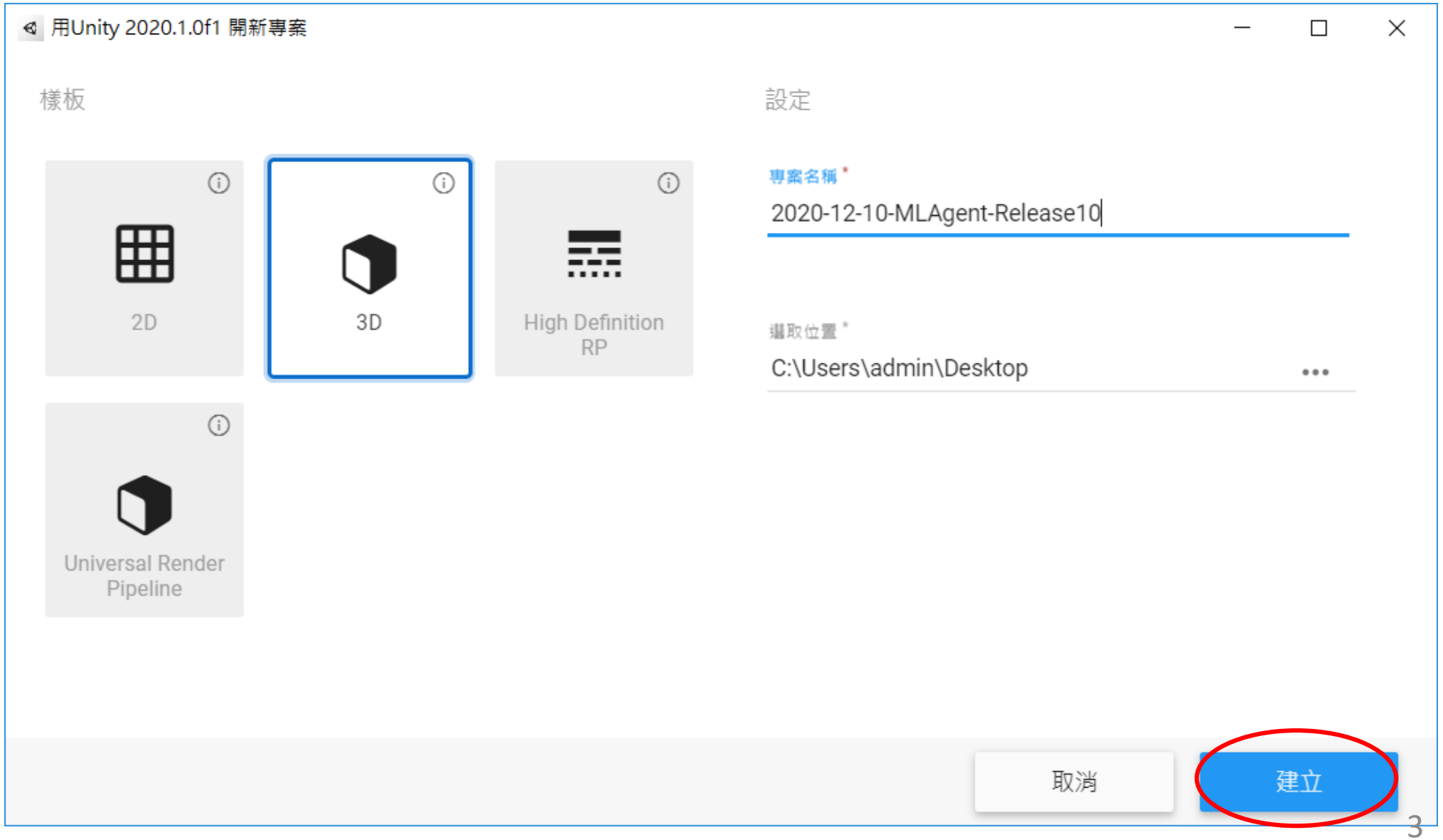
Version	Release Date	Source	Documentation	Download
master (unstable)	--	source	docs	download
Release 10	**November 18, 2020**	**source**	**docs**	**download**
Release 9	November 4, 2020	source	docs	download
Release 8	October 14, 2020	source	docs	download
Release 7	September 16, 2020	source	docs	download
Release 6	August 12, 2020	source	docs	download
Release 5	July 31, 2020	source	docs	download
Release 4	July 15, 2020	source	docs	download

https://github.com/Unity-Technologies/ml-agents

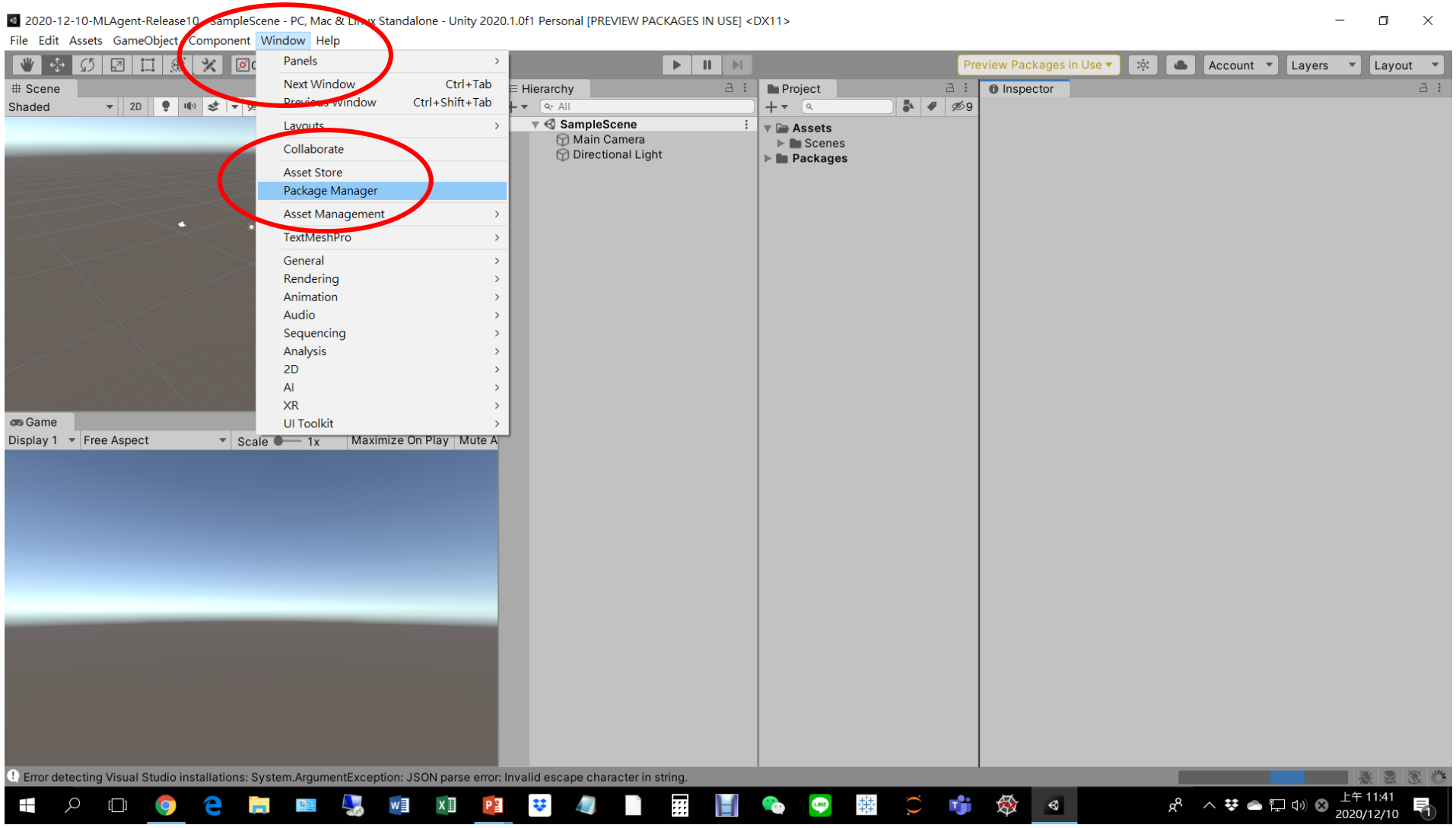
2. Unzip ml-agents-release_10 to your PC



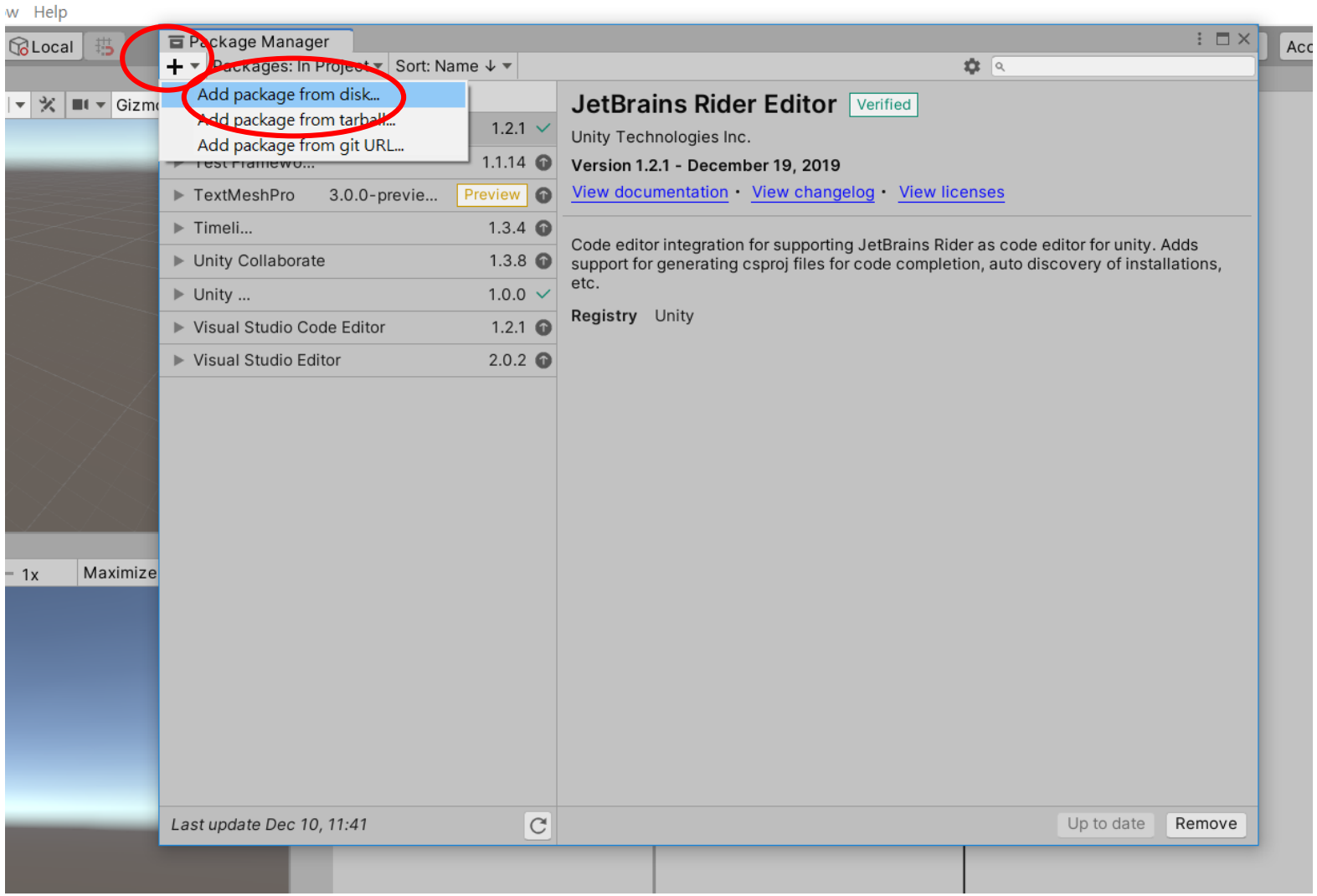
3. Create a new Unity project



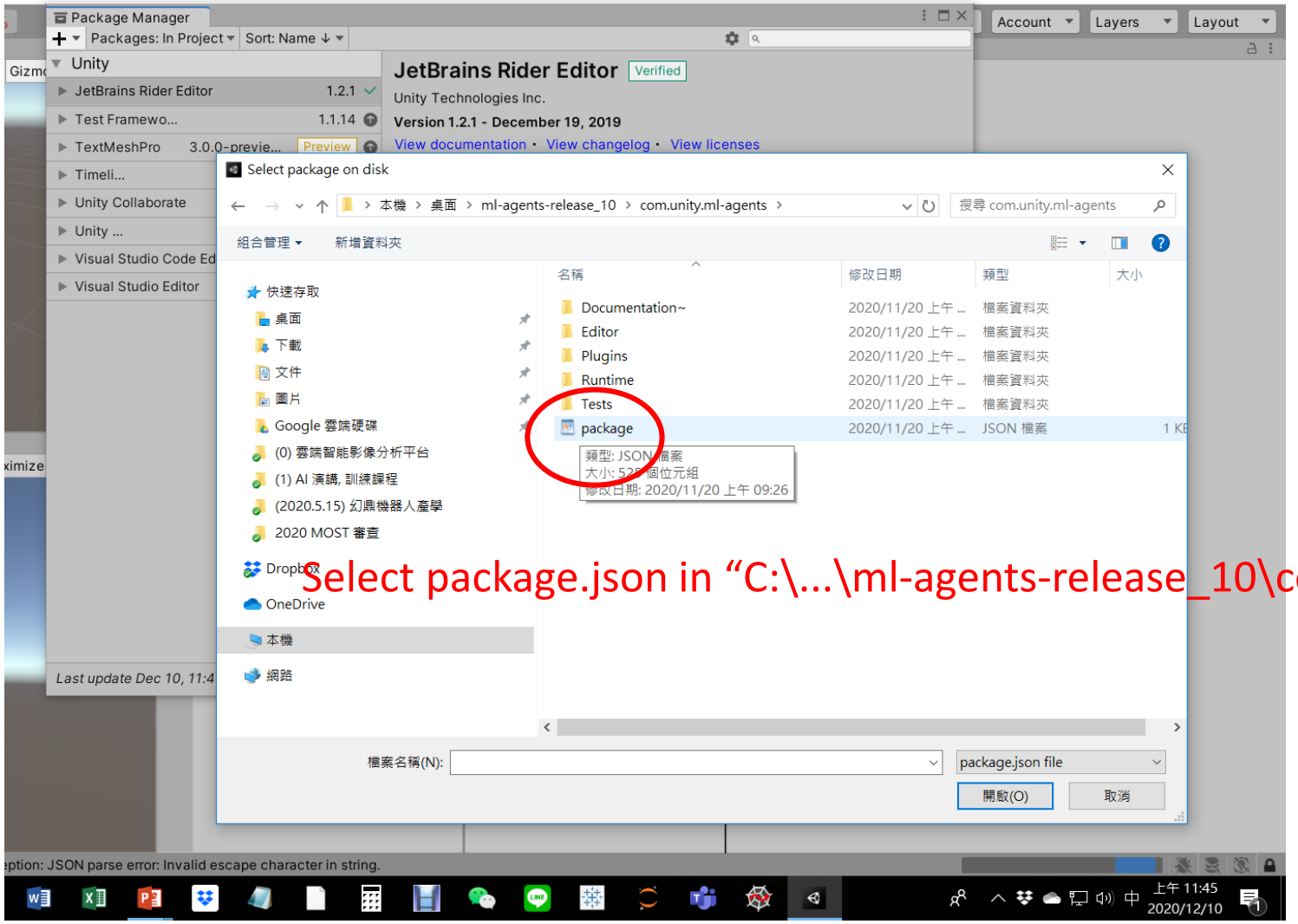
4. Use package manger to import ML Agent 10 to your Unity project



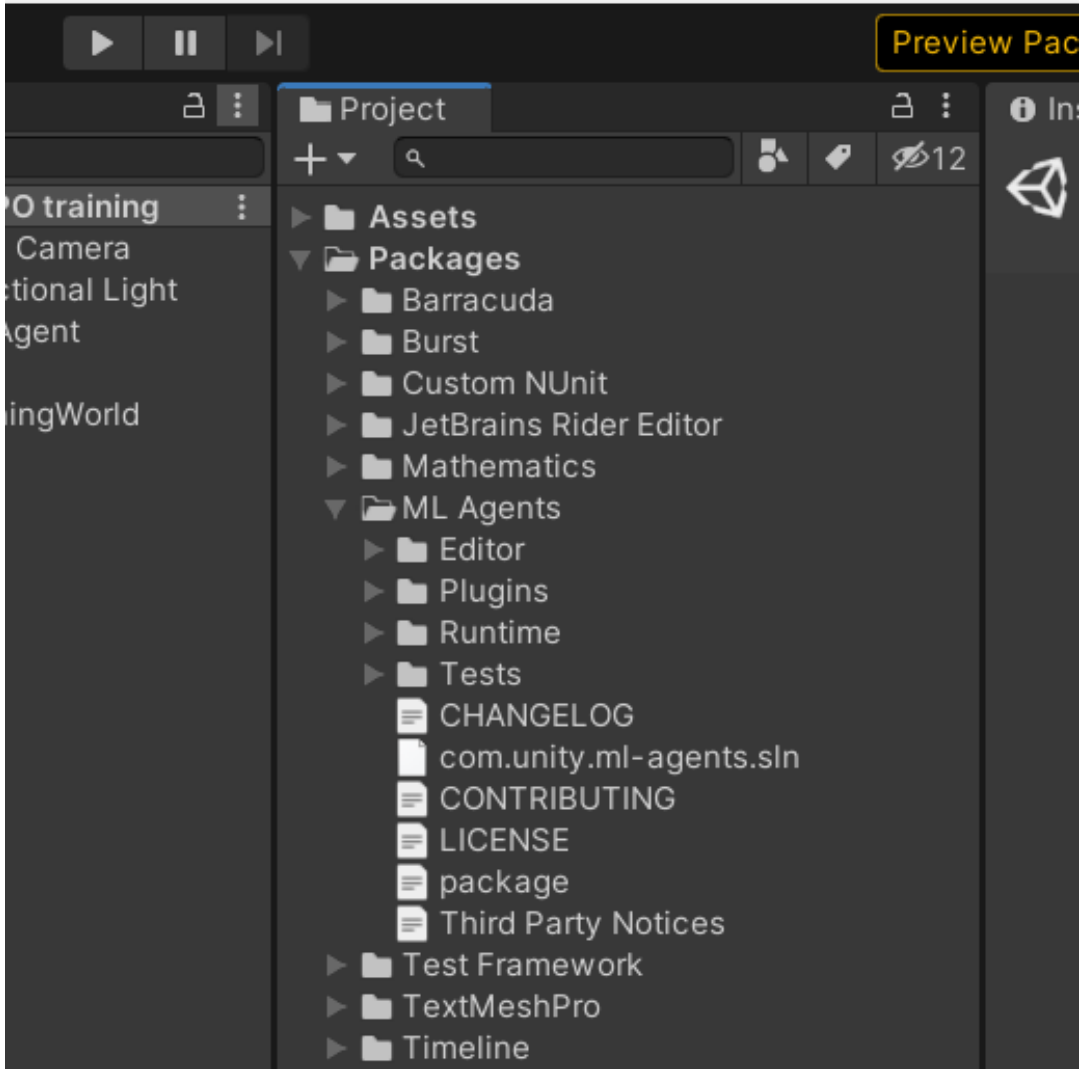
4. Use package manger to import ML Agent 10 to your Unity project



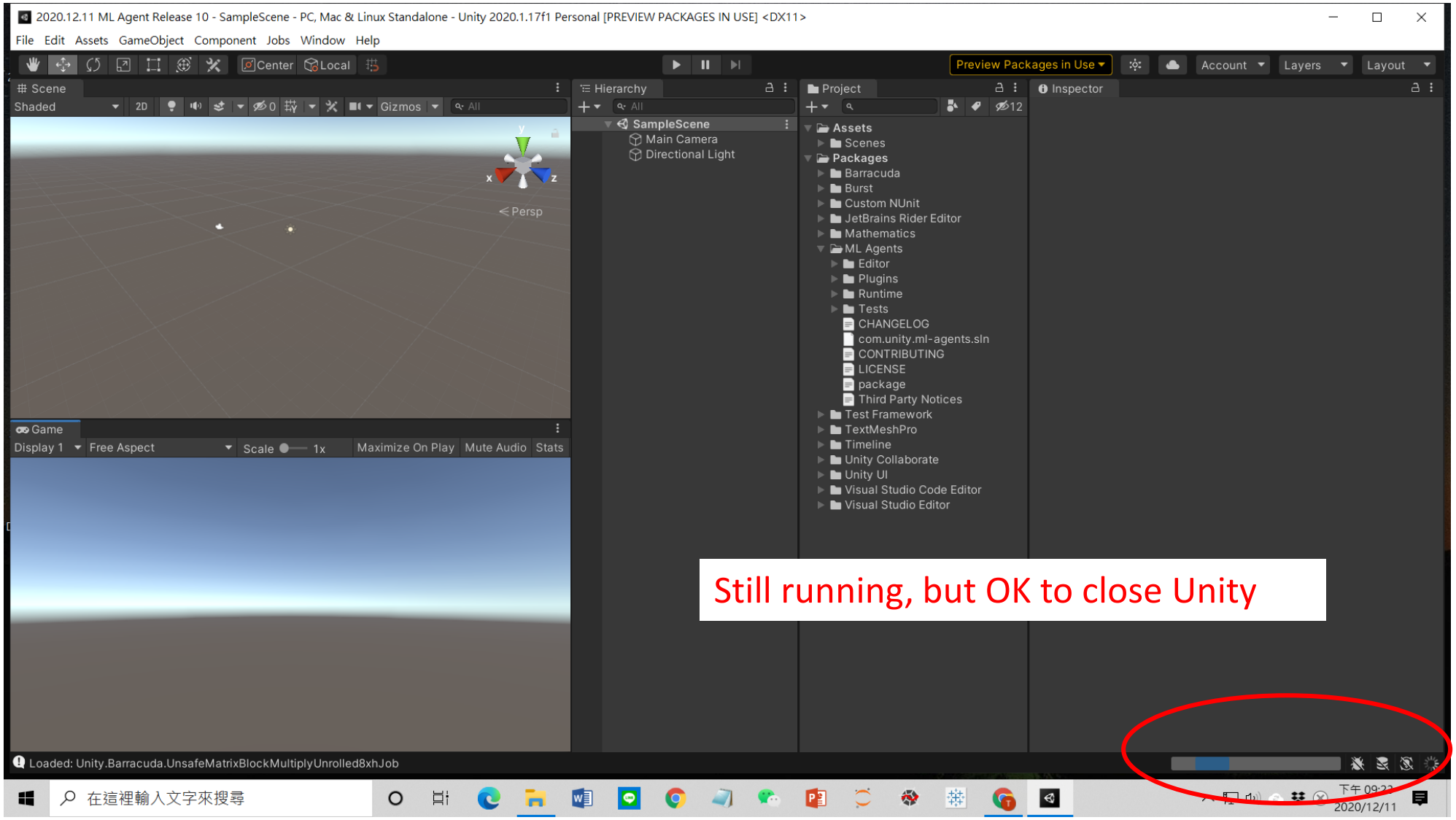
4. Use package manger to import ML Agent 10 to your Unity project



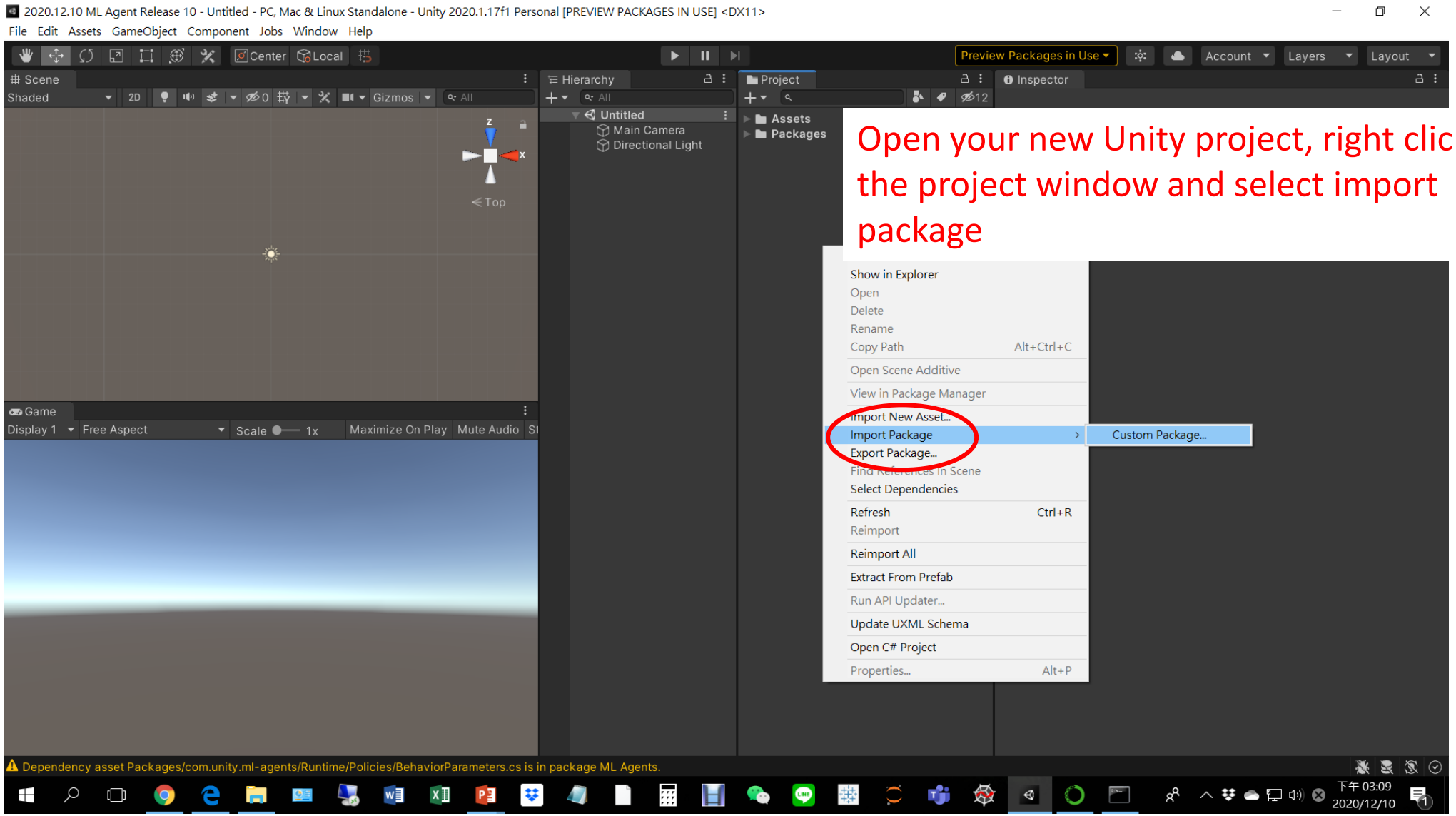
4. Use package manger to import ML Agent 10 to your Unity project



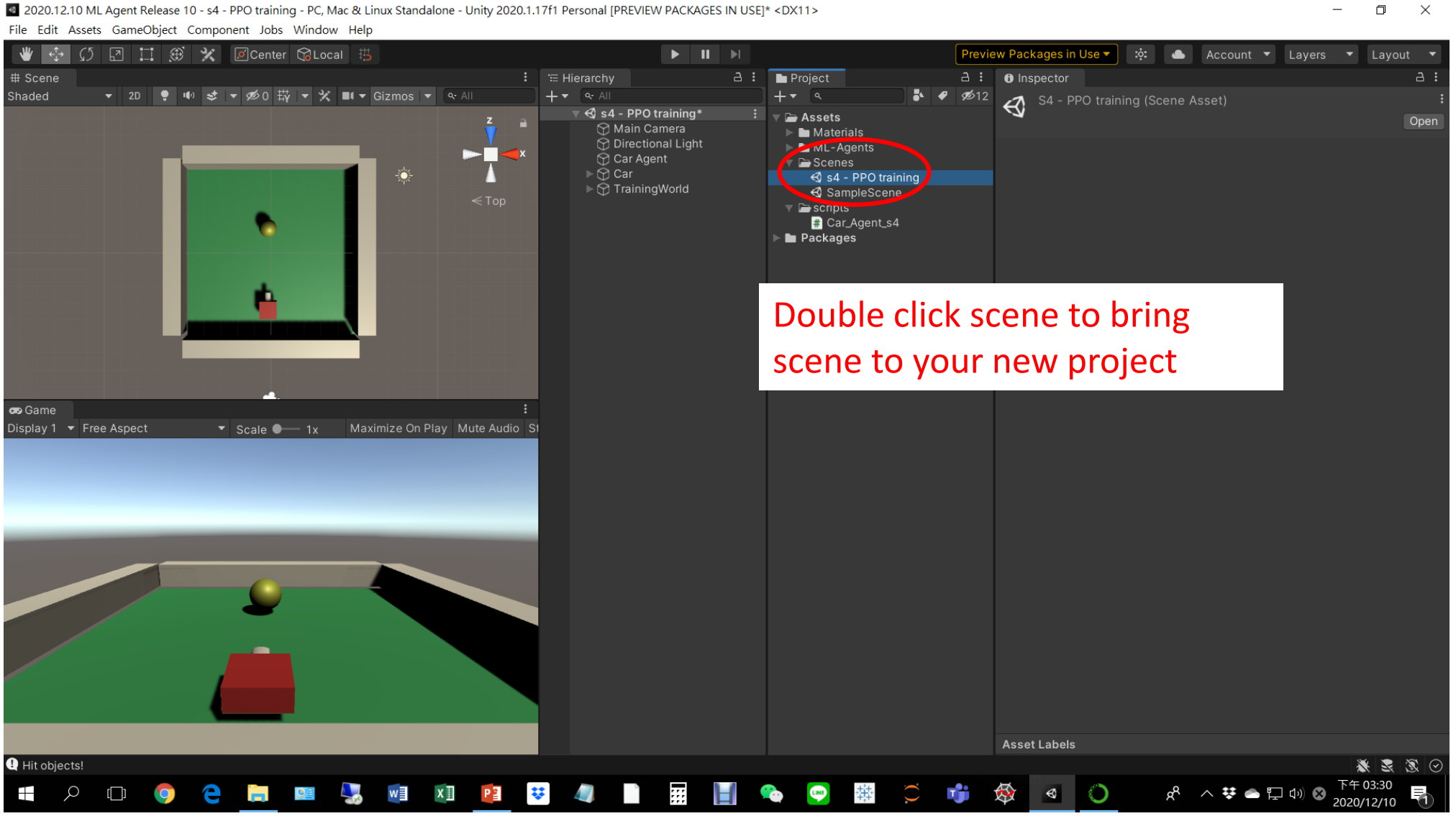
4. Use package manger to import ML Agent 10 to your Unity project



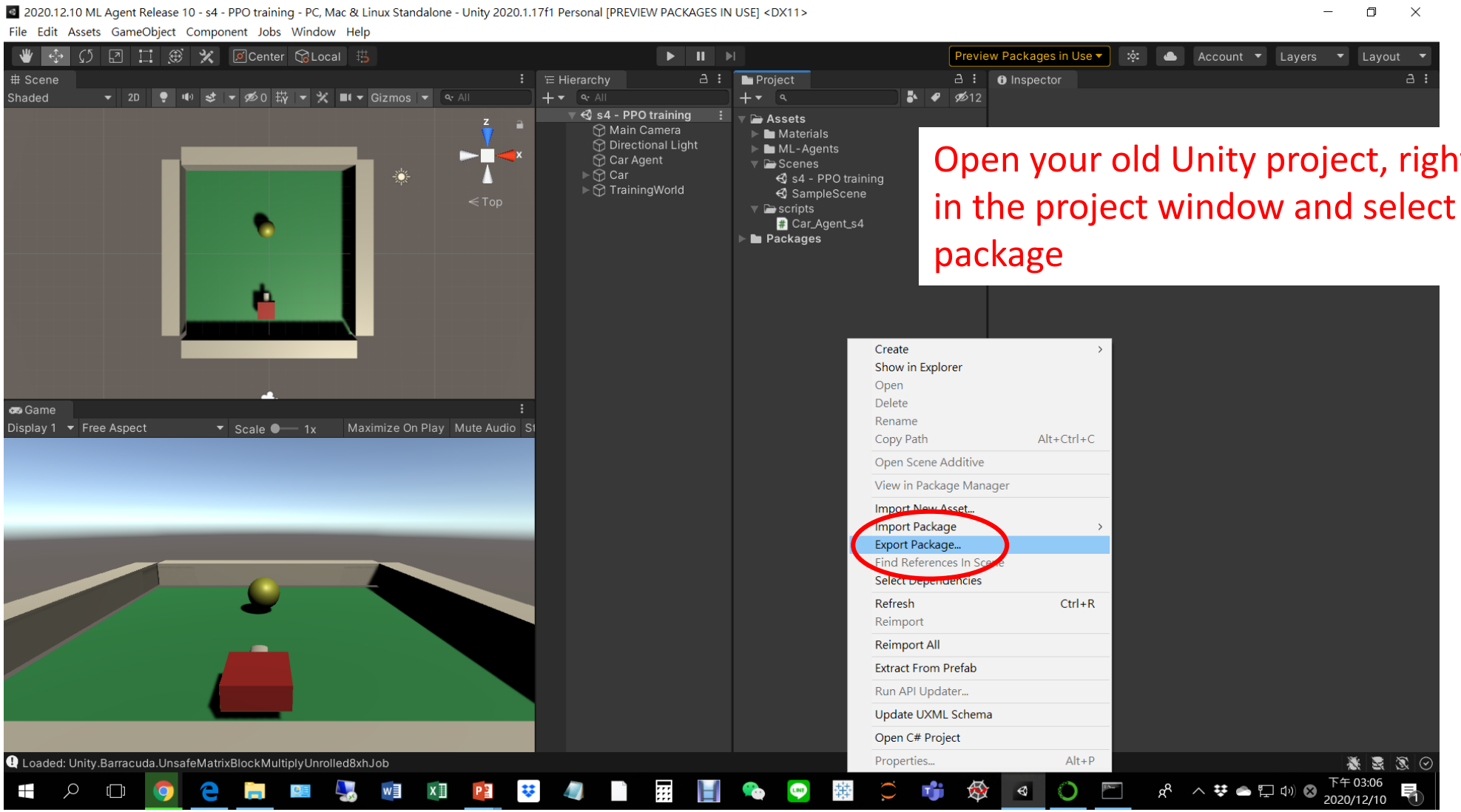
5. Import package to your new Unity project



5. Import package to your new Unity project

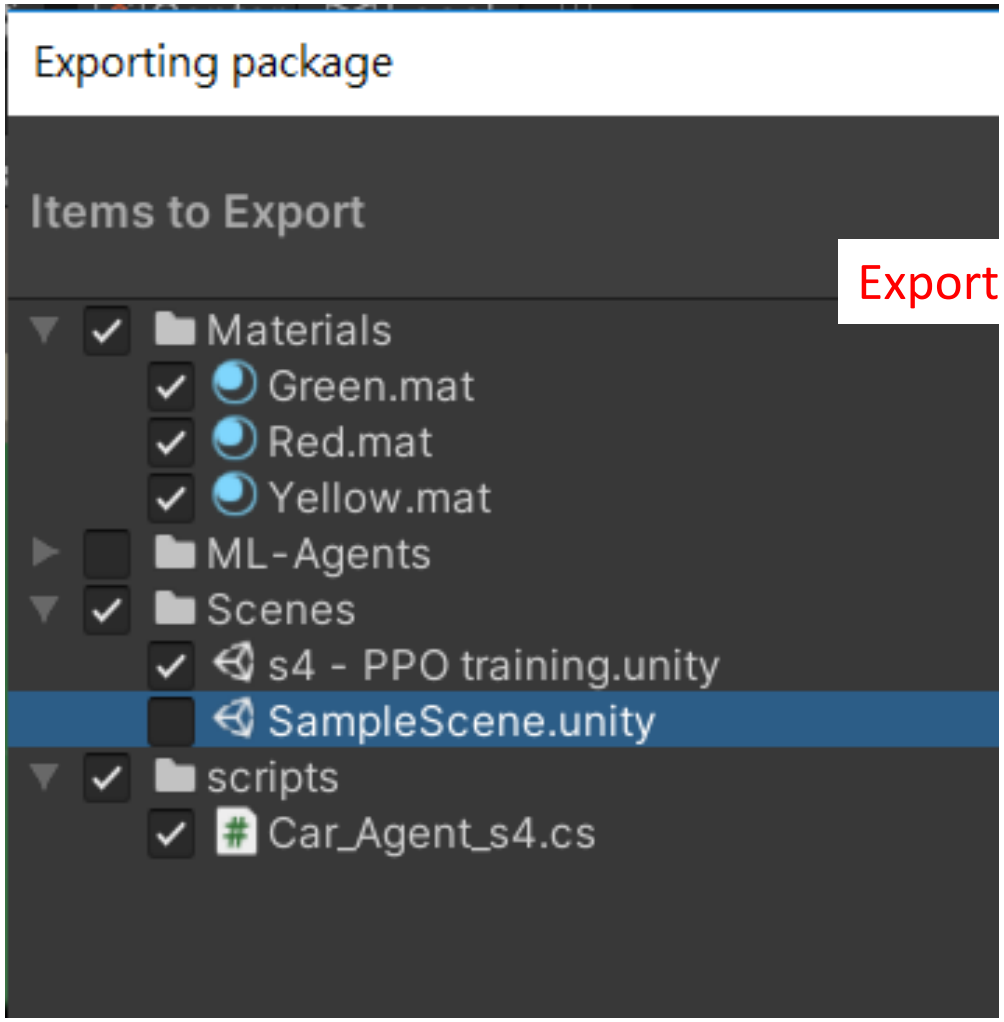


(Export package from your old Unity project)



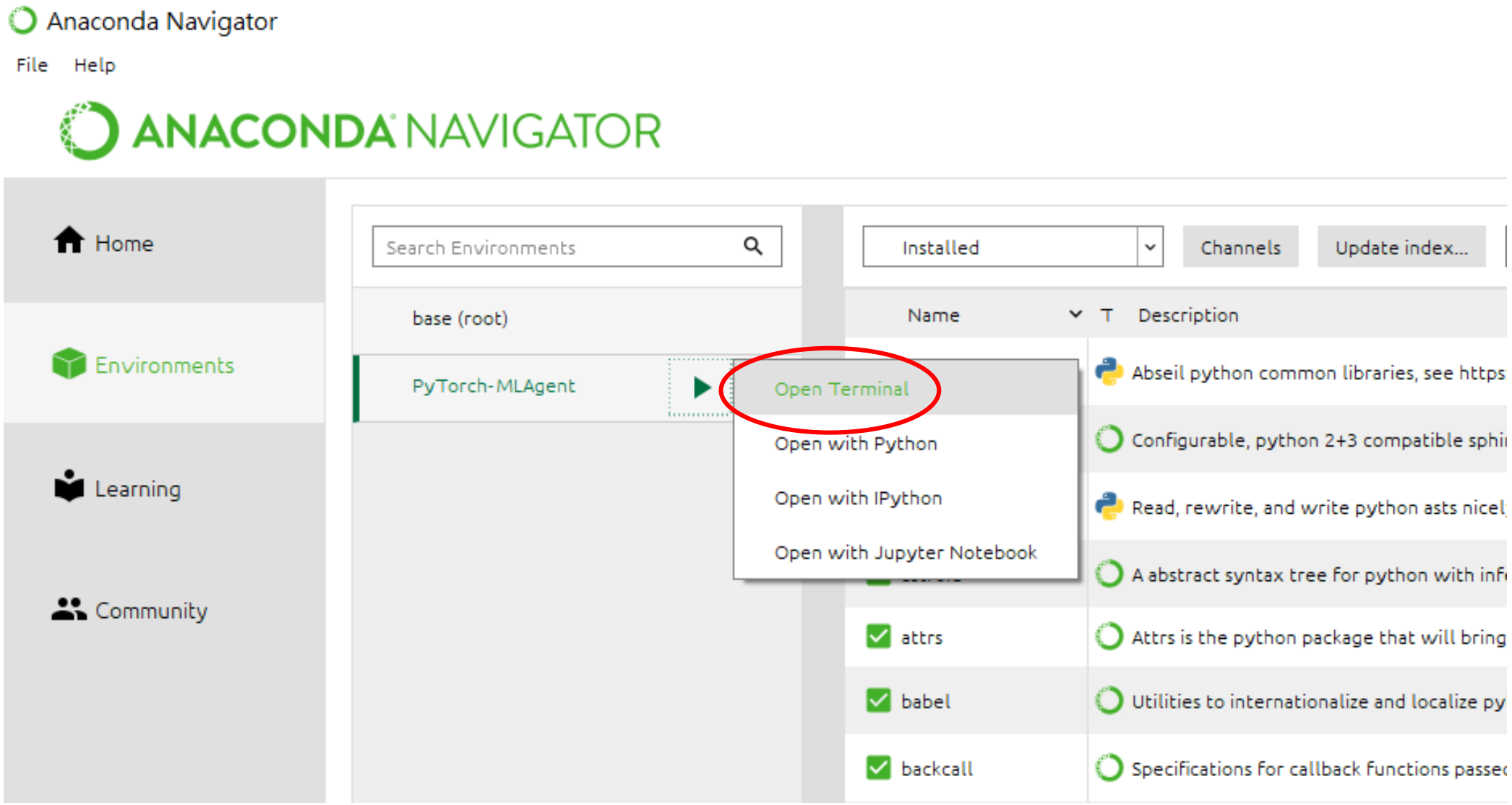
Open your old Unity project, right click in the project window and select export package

(Export package from your old Unity project)

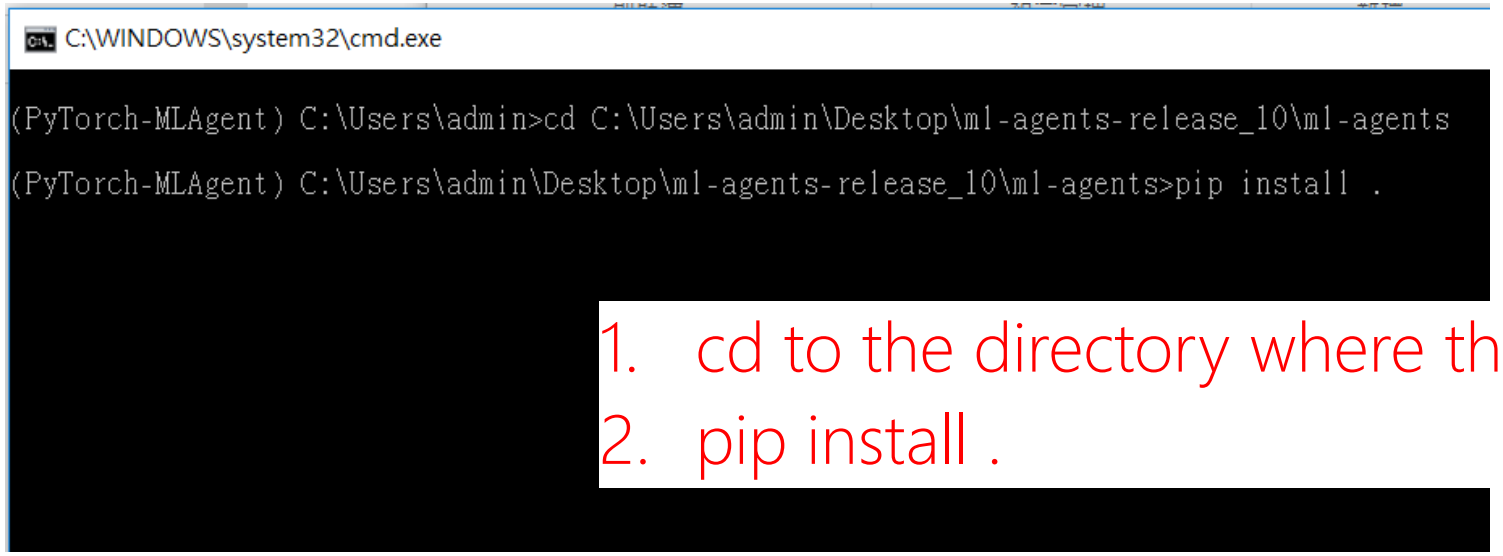


Export materials, scenes, and cs

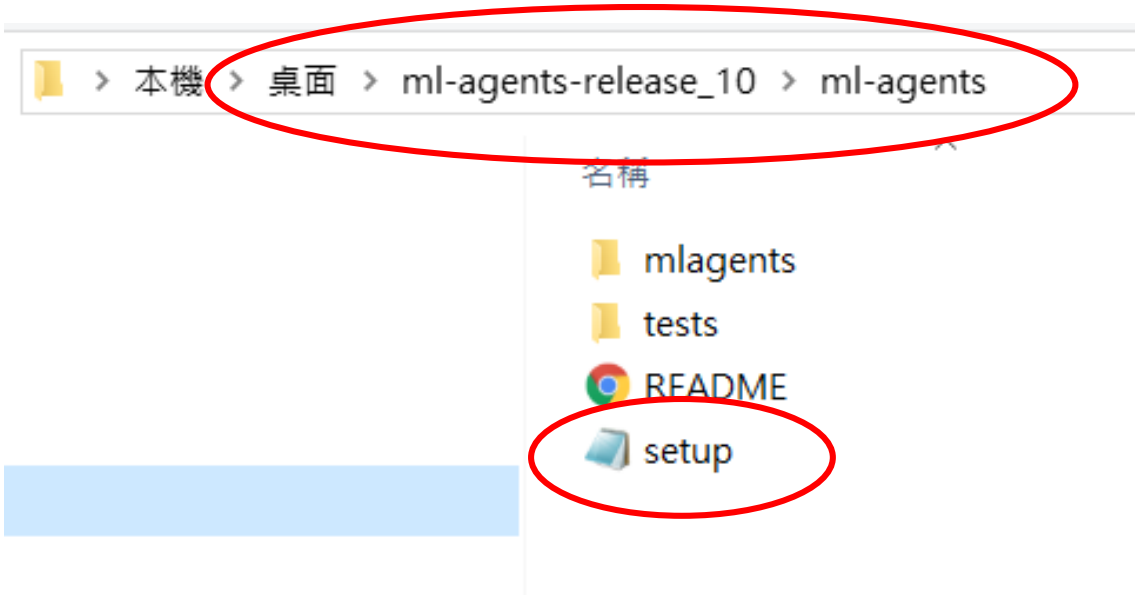
6. Install ML Agent to Anaconda



6. Install ML Agent to Anaconda



1. cd to the directory where the setup.py is located
2. pip install .

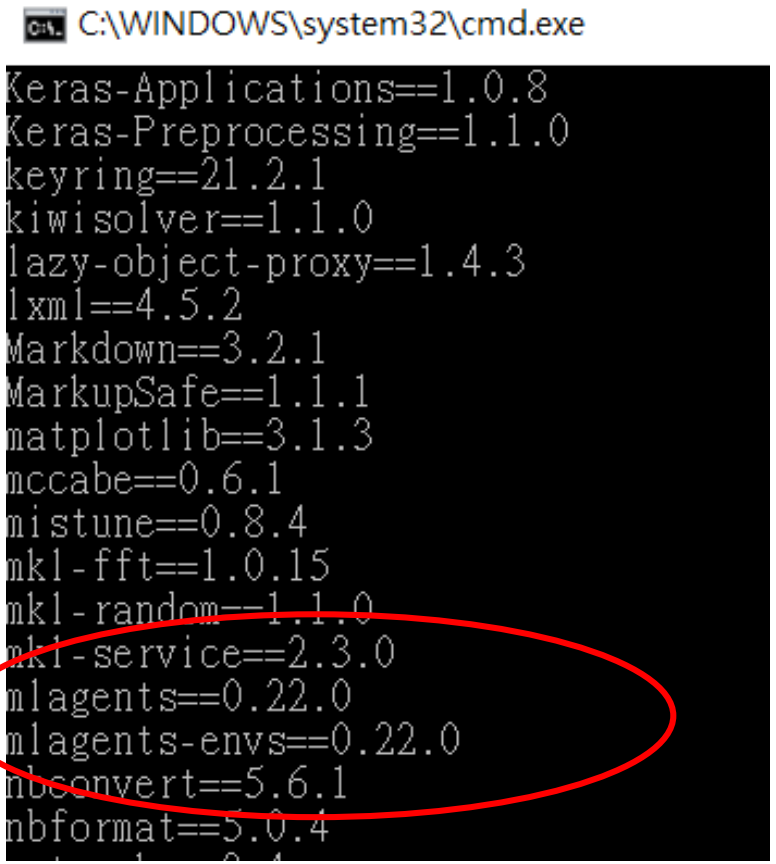


6. Install ML Agent to Anaconda

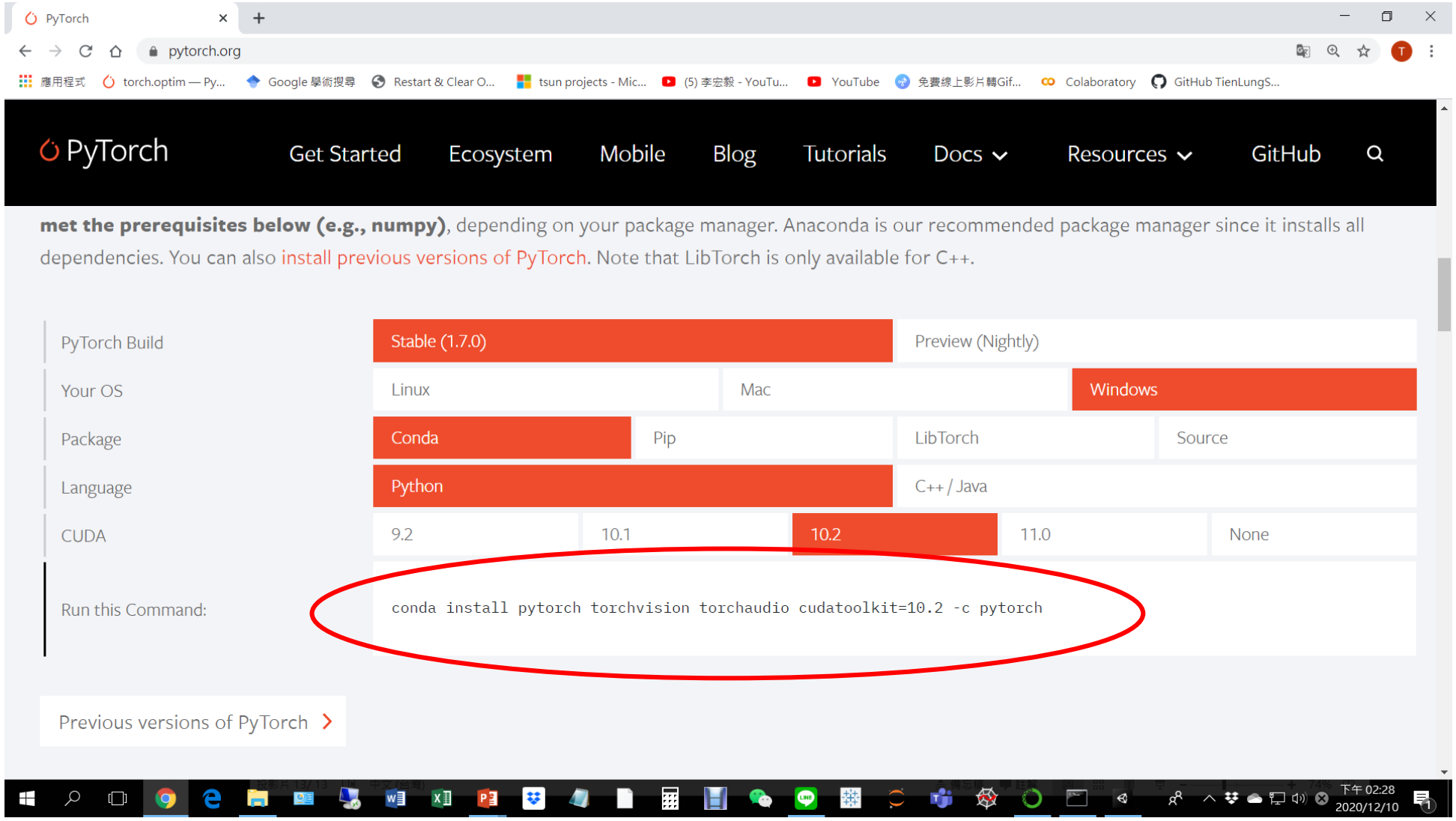
Type “pip freeze” to confirm

C:\WINDOWS\system32\cmd.exe

```
(PyTorch-MLAgent) C:\Users\admin\Desktop\ml-agents-release_10\ml-agents>pip freeze
absl-py==0.9.0
alabaster==0.7.12
astor==0.8.1
astroid==2.4.2
attrs==19.3.0
Babel==2.8.0
backcall==0.1.0
bleach==3.1.1
boto3==1.14.33
botocore==1.17.33
brotlipy==0.7.0
cachetools==4.0.0
cattrs==1.0.0
```

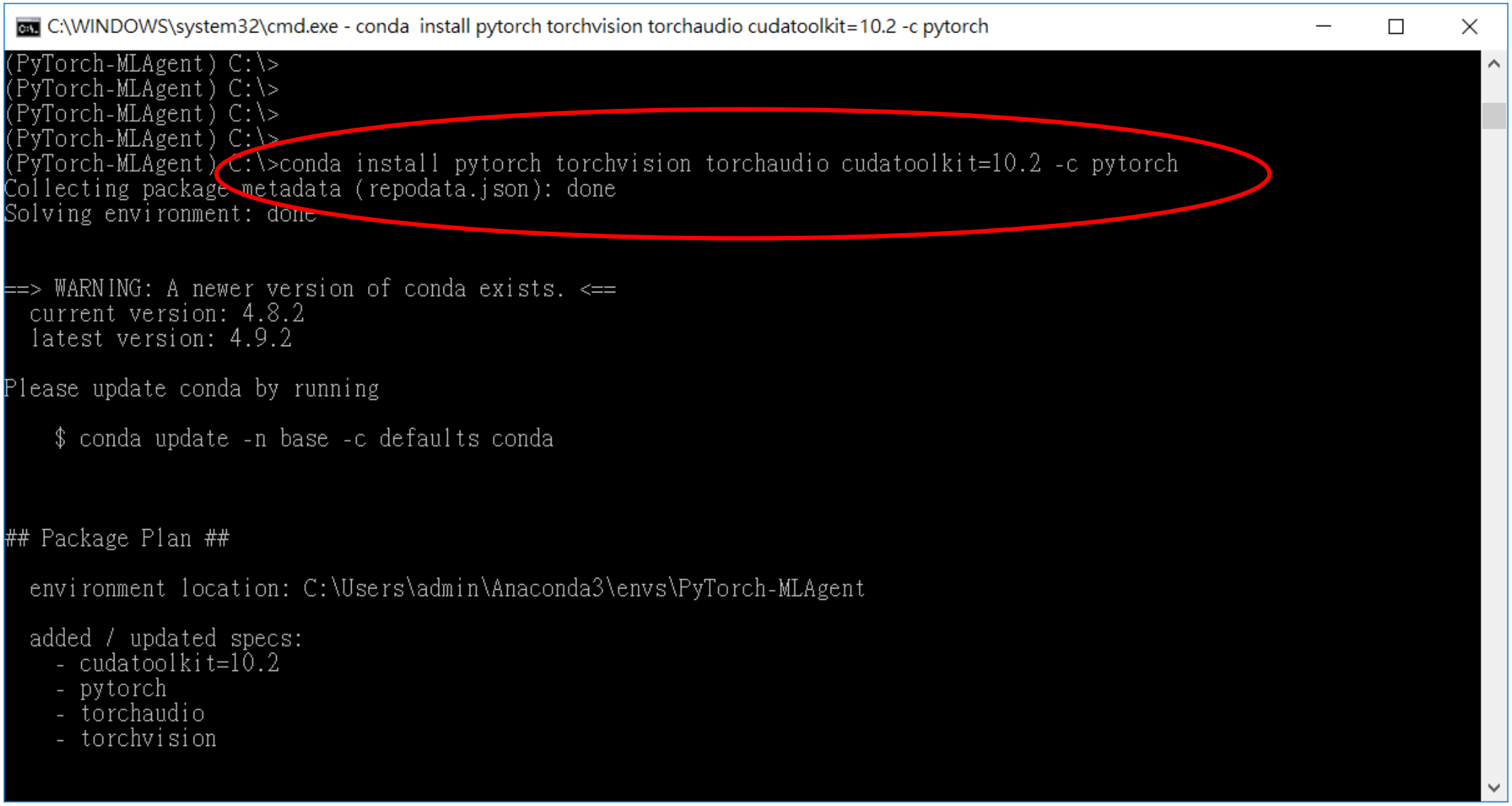


7. Update PyTorch to 1.6.0 or later



https://pytorch.org/

7. Update PyTorch to 1.6.0 or later



7. Update PyTorch to 1.6.0 or later

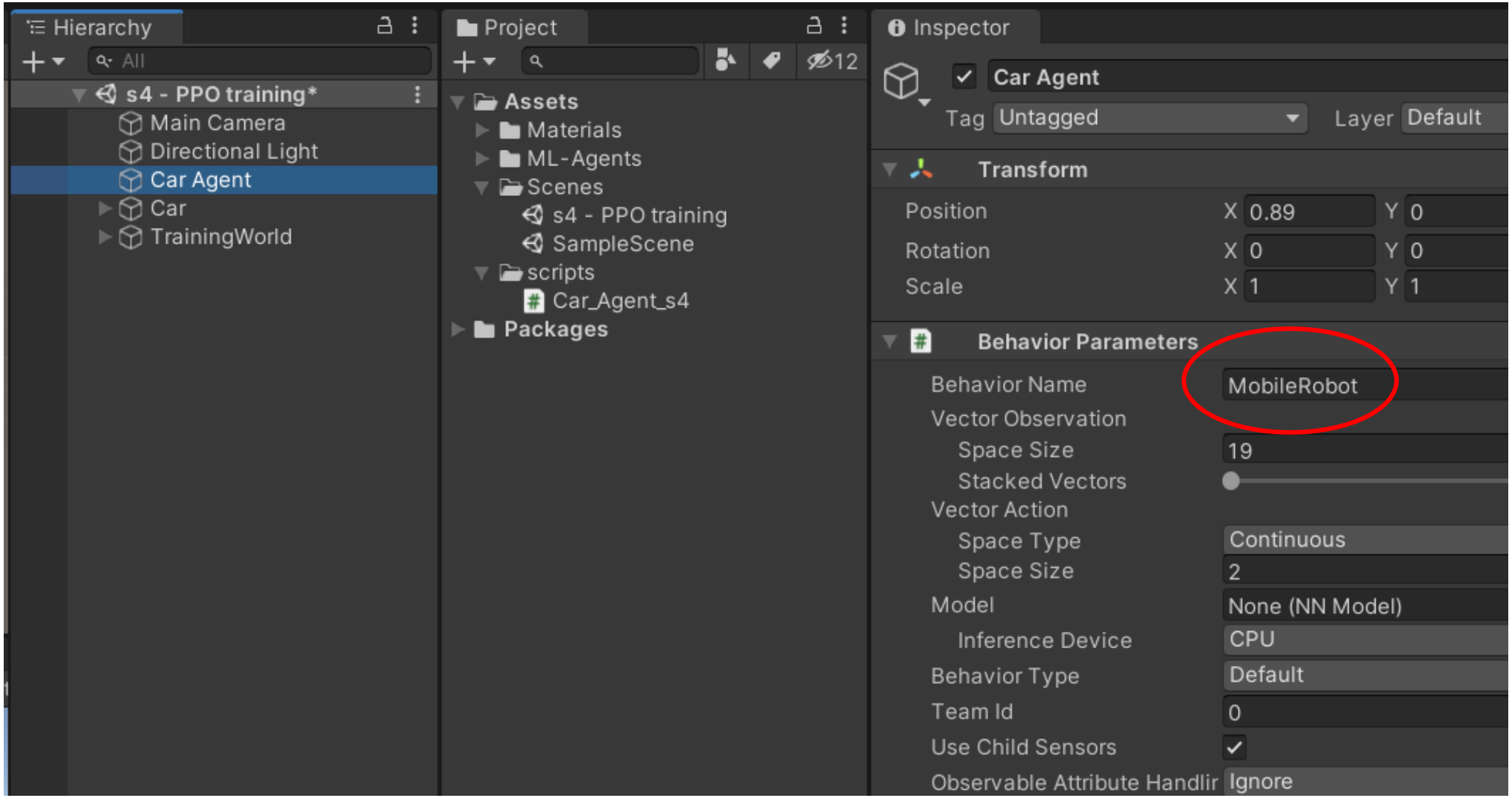
C:\WINDOWS\system32\cmd.exe - conda install pytorch torchvision torchaudio cudatoolkit=10.2 -c pytorch

```
The following NEW packages will be INSTALLED:

  dataclasses        pkgs/main/win-64::dataclasses-0.7-py36_0
  libuv              pkgs/main/win-64::libuv-1.40.0-he774522_0
  torchaudio         pytorch/win-64::torchaudio-0.7.0-py36
  typing_extensions  pkgs/main/noarch::typing_extensions-3.7.4.3-py_0

The following packages will be UPDATED:

  ca-certificates                     2020.6.24-0 --> 2020.12.8-haa95532_0
  certifi                         2020.6.20-py36_0 --> 2020.12.5-py36haa95532_0
  cudatoolkit                 10.1.243-h74a9793_0 --> 10.2.89-h74a9793_1
  openssl                       1.1.1g-he774522_1 --> 1.1.1i-h2bbff1b_0
  pytorch                 1.4.0-py3.6_cuda101_cudnn7_0 --> 1.7.0-py3.6_cuda102_cudnn7_0
  torchvision                  0.5.0-py36_cu101 --> 0.8.1-py36_cu102

The following packages will be DOWNGRADED:

  cudnn                        7.6.5-cuda10.1_0 --> 7.6.5-cuda10.2_0


Proceed ([y]/n)? y


Downloading and Extracting Packages
torchaudio-0.7.0     | 2.7 MB    | ########################################################################## | 100%
torchvision-0.8.1    | 7.2 MB    | ########################################################################## | 100%
dataclasses-0.7      | 31 KB     | ########################################################################## | 100%
pytorch-1.7.0        | 768.1 MB  | ###7                                                                       |   5%
```

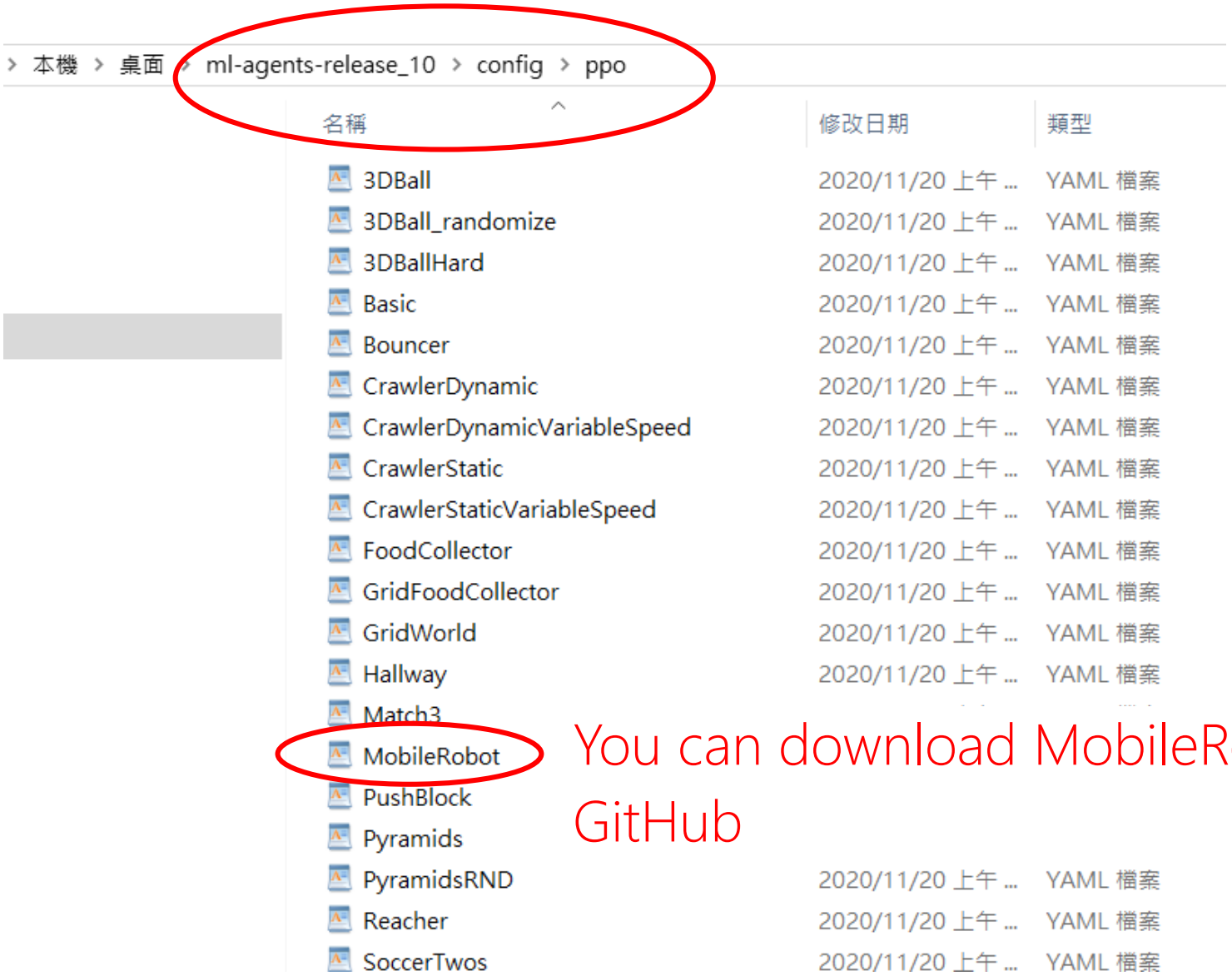
7. Update PyTorch to 1.6.0 or later

```
toml==0.10.1
torch==1.7.0
torchaudio==0.7.0
torchvision==0.8.1
tornado==6.0.3
tqdm==4.47.0
traitlets==4.3.3
```

8. Change your behavior name



9. Create a configure file of the same name



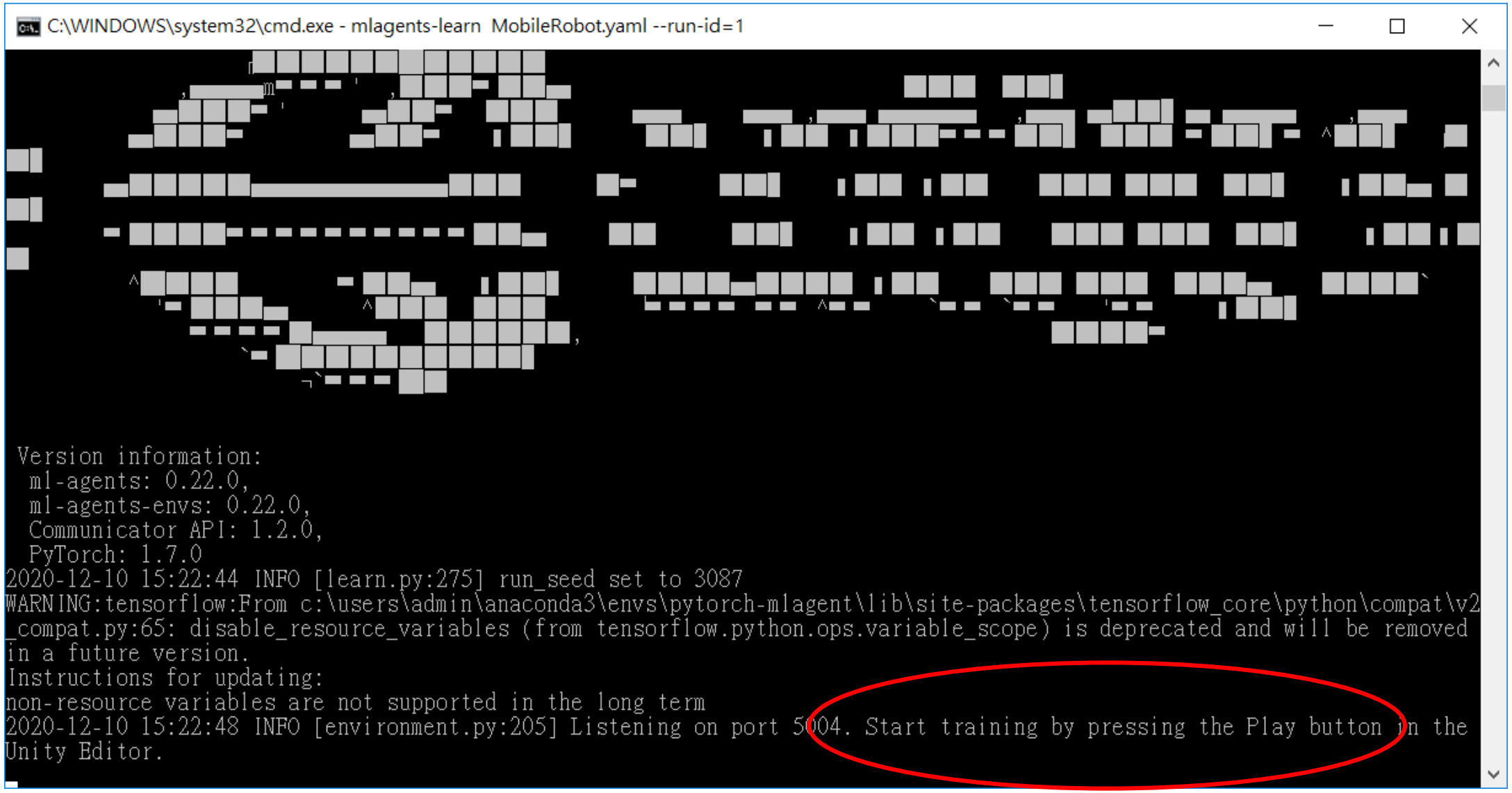

```
behaviors:
  MobileRobot:
    trainer_type: ppo
    hyperparameters:
      batch_size: 64
      buffer_size: 12000
      learning_rate: 0.0003
      beta: 0.001
      epsilon: 0.2
      lambd: 0.99
      num_epoch: 3
      learning_rate_schedule: linear
    network_settings:
      normalize: true
      hidden_units: 128
      num_layers: 2
      vis_encode_type: simple
    reward_signals:
      extrinsic:
        time_horizon: 1000
        summary_freq: 12000
        threaded: true
```

You can download MobileRobot.yaml from my GitHub

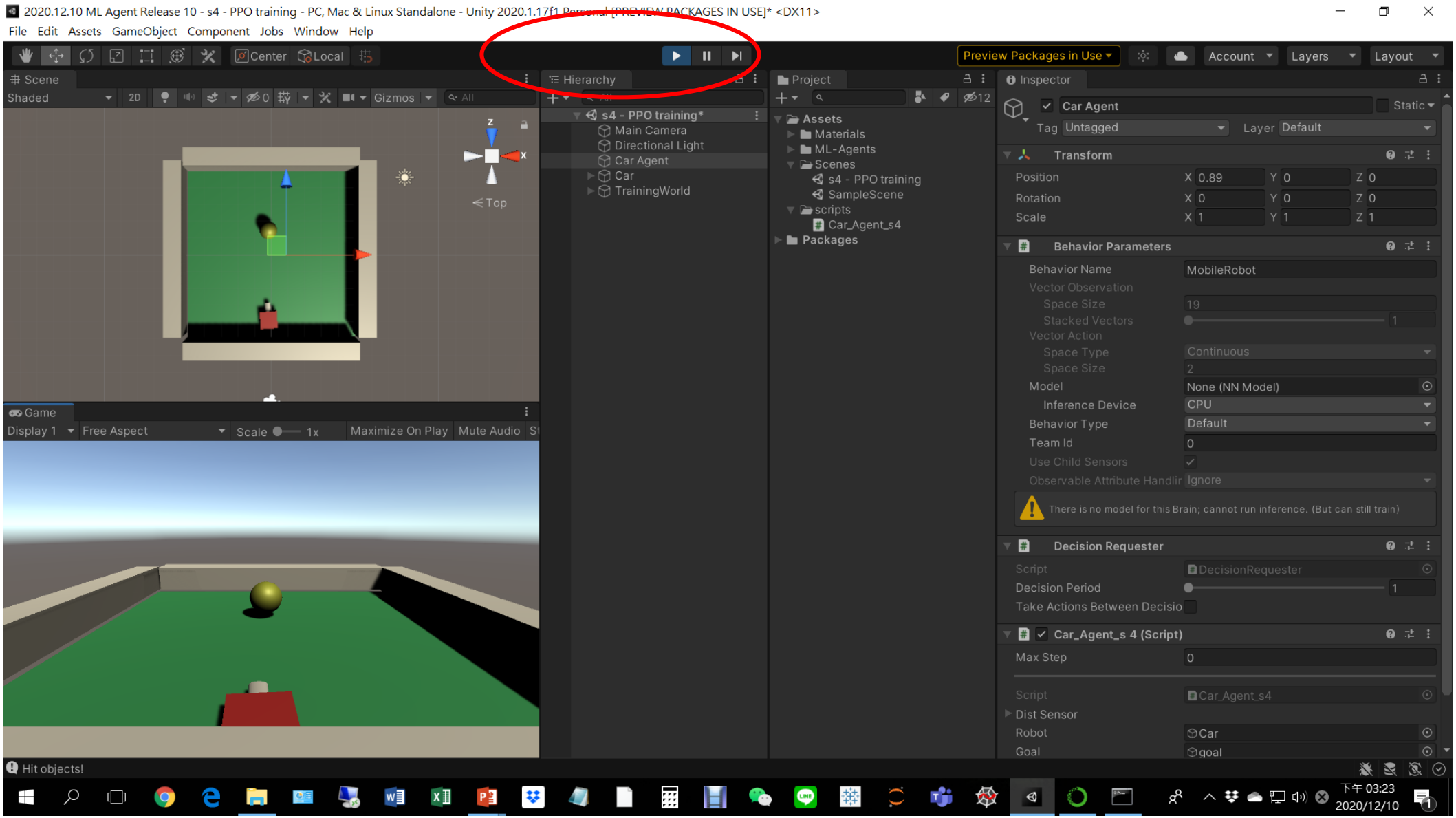
10. Start train

1. cd to the folder of your configuration file (C:\...\ml-agents-release_10\config\ppo)
2. mlagents-learn MobilRobot.yaml --run-id=1

10. Start train



10. Start train



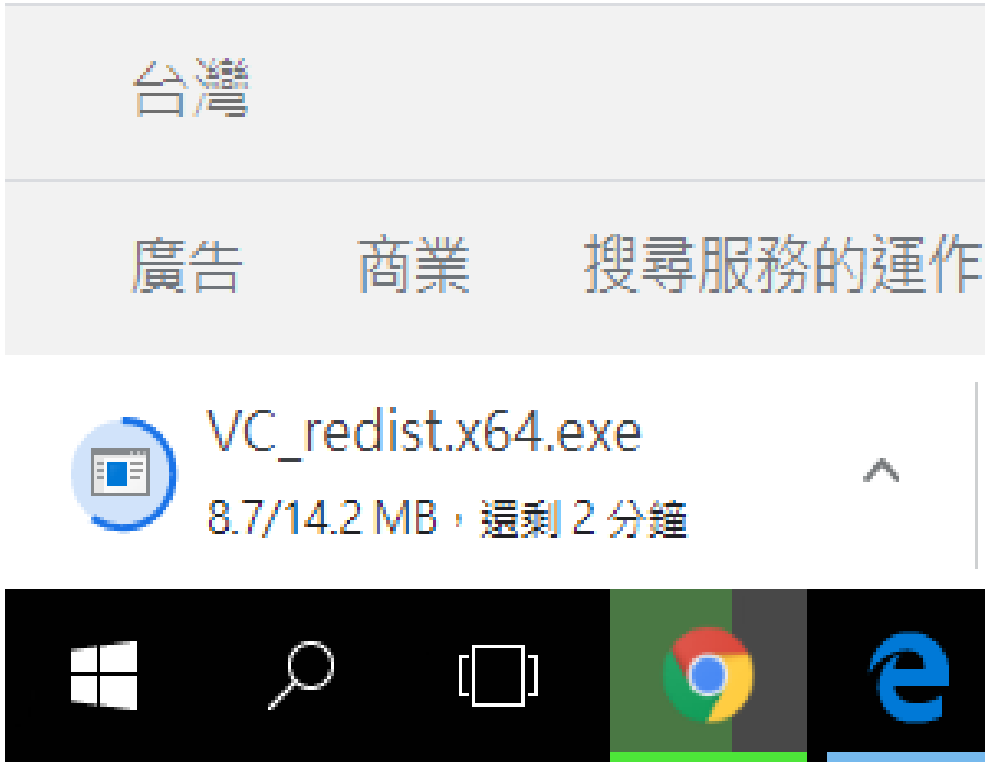
(You might need to download MS VC redistributable)

C:\WINDOWS\system32\cmd.exe

```
(PyTorch-MLAgent) C:\Users\admin>cd C:\Users\admin\Desktop\ml-agents-release_10\config\ppo

(PyTorch-MLAgent) C:\Users\admin\Desktop\ml-agents-release_10\config\ppo>mlagents-learn MobileRobot.yaml -run-id=1
Microsoft Visual C++ Redistributable is not installed, this may lead to the DLL load failure.
                It can be downloaded at https://aka.ms/vs/16/release/vc_redist.x64.exe
Traceback (most recent call last):
  File "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\runpy.py", line 193, in _run_module_as_main
    "__main__", mod_spec)
  File "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\runpy.py", line 85, in _run_code
    exec(code, run_globals)
  File "C:\Users\admin\Anaconda3\envs\PyTorch-MLAgent\Scripts\mlagents-learn.exe\__main__.py", line 4, in <module>
  File "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\site-packages\mlagents\trainers\learn.py", line 2, in <module>

    from mlagents import torch_utils
  File "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\site-packages\mlagents\torch_utils\__init__.py", line 1, in <m
odule>
    from mlagents.torch_utils.torch import torch as torch  # noqa
  File "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\site-packages\mlagents\torch_utils\torch.py", line 29, in <mod
ule>
    import torch  # noqa I201
  File "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\site-packages\torch\__init__.py", line 128, in <module>
    raise err
OSError: [WinError 126] 找不到指定的模組。 Error loading "c:\users\admin\anaconda3\envs\pytorch-mlagent\lib\site-package
s\torch\lib\asmjit.dll" or one of its dependencies.

(PyTorch-MLAgent) C:\Users\admin\Desktop\ml-agents-release_10\config\ppo>
```

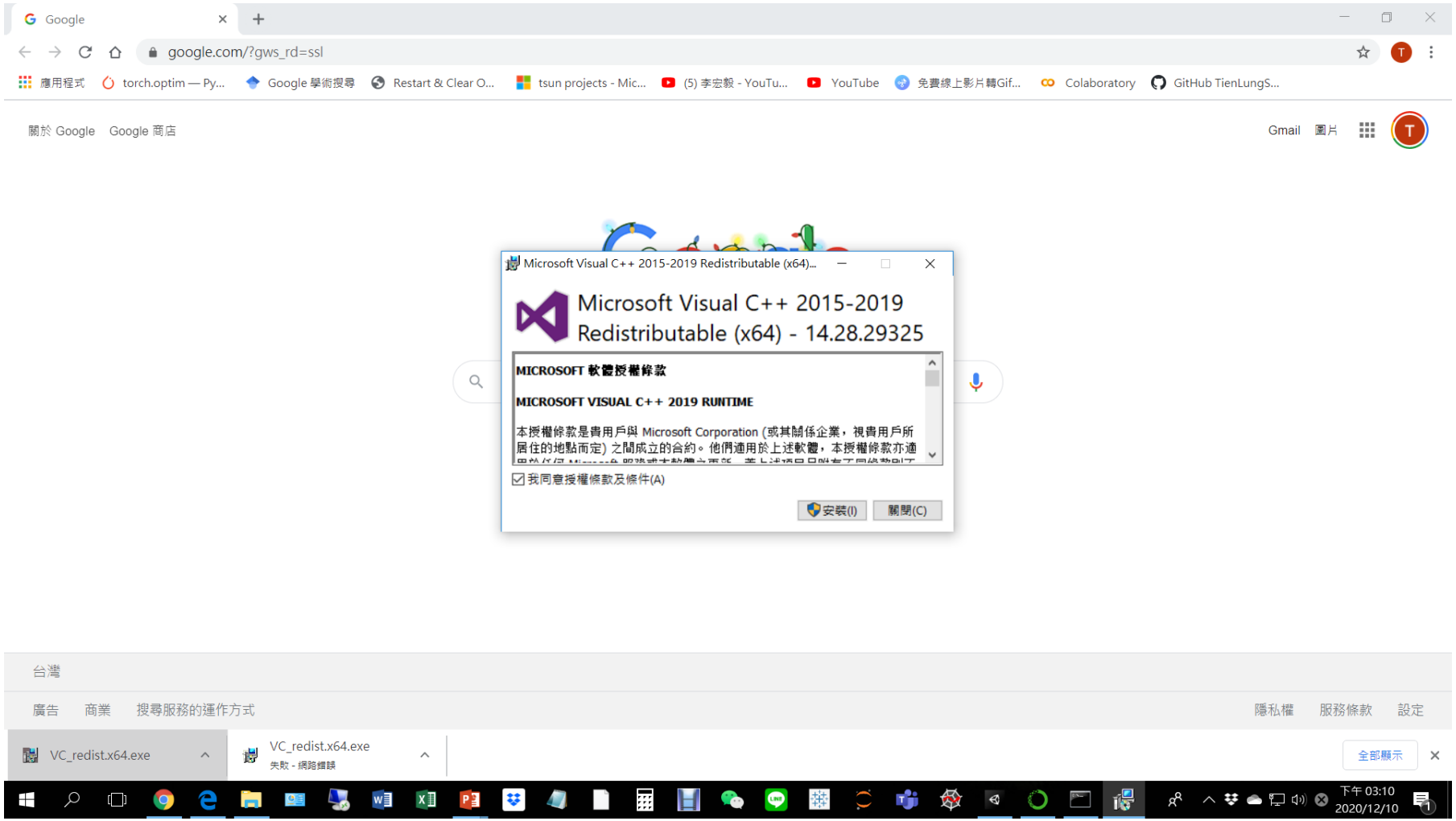
https://aka.ms/vs/16/release/vc_redist.x64.exe

(You might need to download MS VC redistributable)

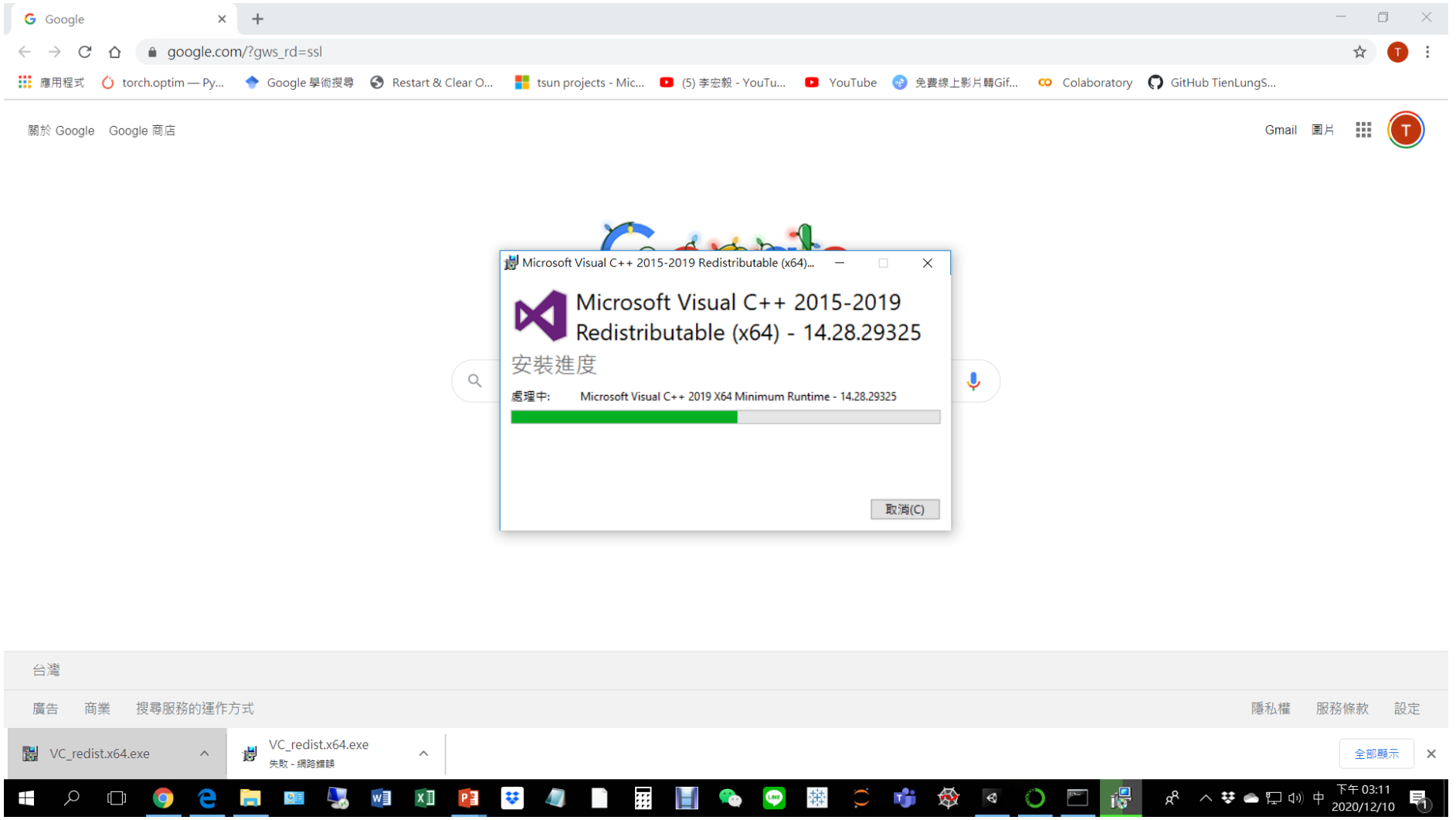


https://aka.ms/vs/16/release/vc_redist.x64.exe

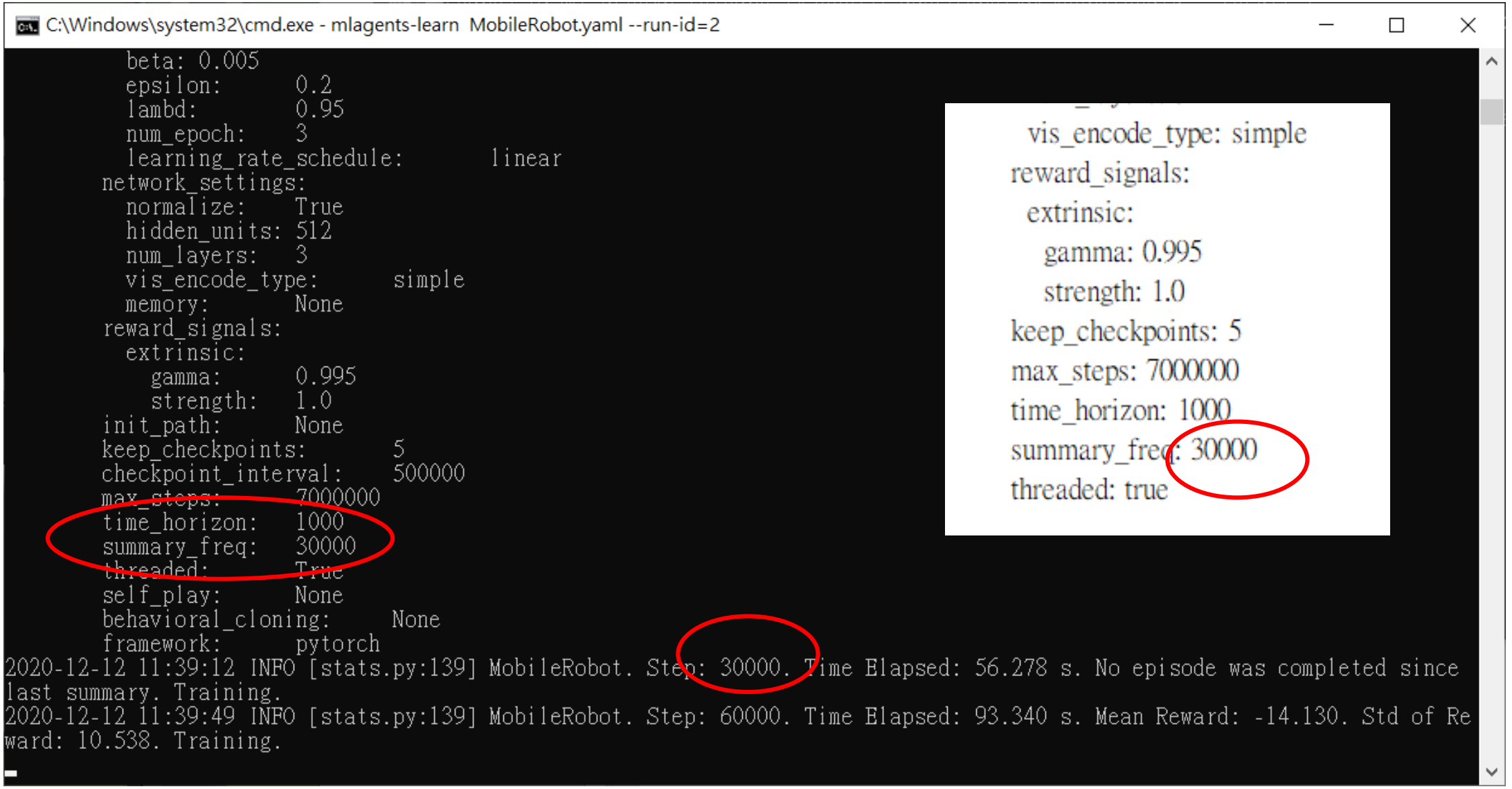
(You might need to download MS VC redistributable)



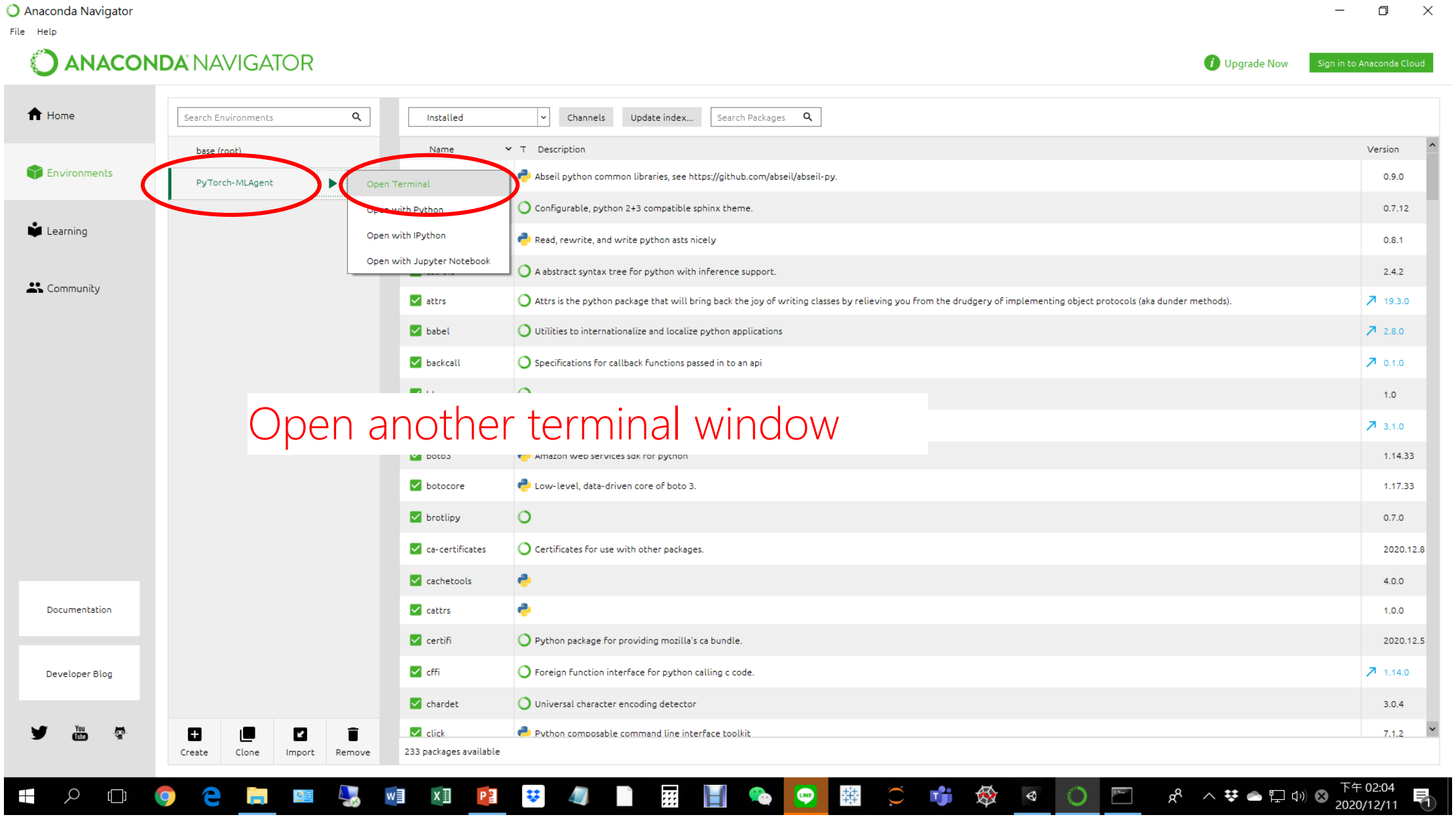
(You might need to download MS VC redistributable)



11. Training

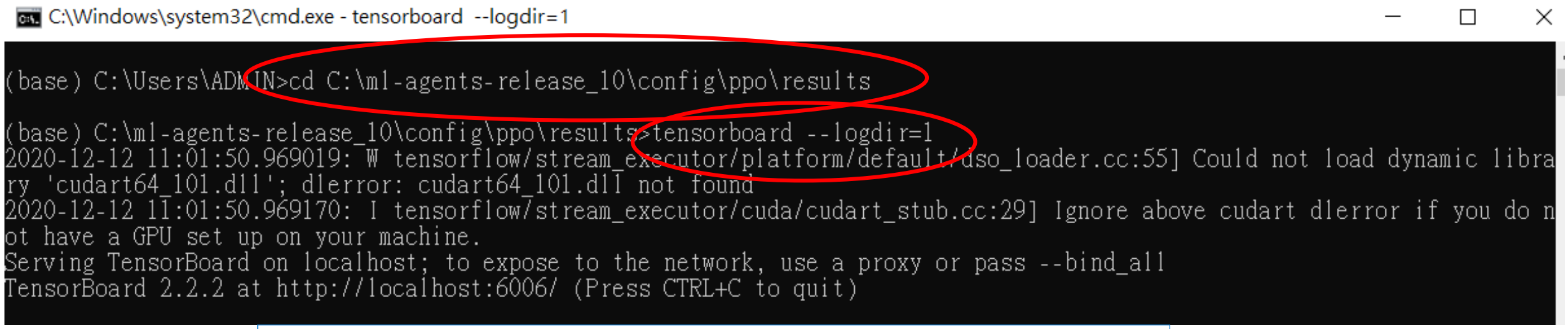

C:\Windows\system32\cmd.exe - mlagents-learn MobileRobot.yaml --run-id=2
beta: 0.005
epsilon: 0.2
lambd: 0.95
num_epoch: 3
learning_rate_schedule: linear
network_settings:
normalize: True
hidden_units: 512
num_layers: 3
vis_encode_type: simple
memory: None
reward_signals:
extrinsic:
gamma: 0.995
strength: 1.0
init_path: None
keep_checkpoints: 5
checkpoint_interval: 500000
max_steps: 7000000
time_horizon: 1000
summary_freq: 30000
threaded: True
self_play: None
behavioral_cloning: None
framework: pytorch
2020-12-12 11:39:12 INFO [stats.py:139] MobileRobot. Step: 30000. Time Elapsed: 56.278 s. No episode was completed since last summary. Training.
2020-12-12 11:39:49 INFO [stats.py:139] MobileRobot. Step: 60000. Time Elapsed: 93.340 s. Mean Reward: -14.130. Std of Reward: 10.538. Training.
vis_encode_type: simple
reward_signals:
extrinsic:
gamma: 0.995
strength: 1.0
keep_checkpoints: 5
max_steps: 7000000
time_horizon: 1000
summary_freq: 30000
threaded: true

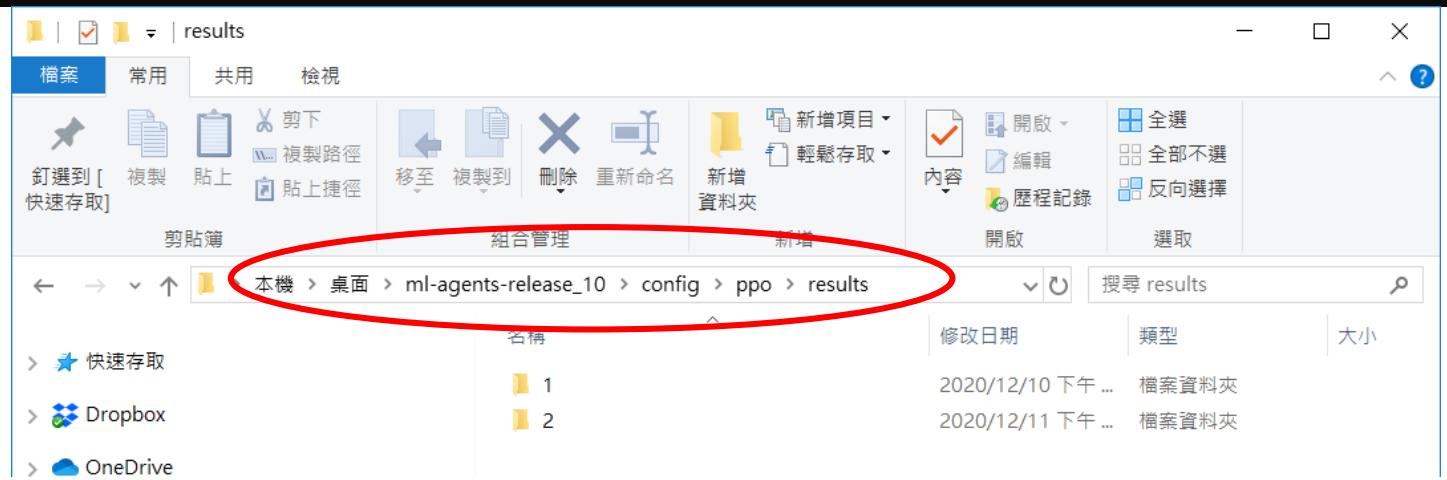
12. Monitor training performance



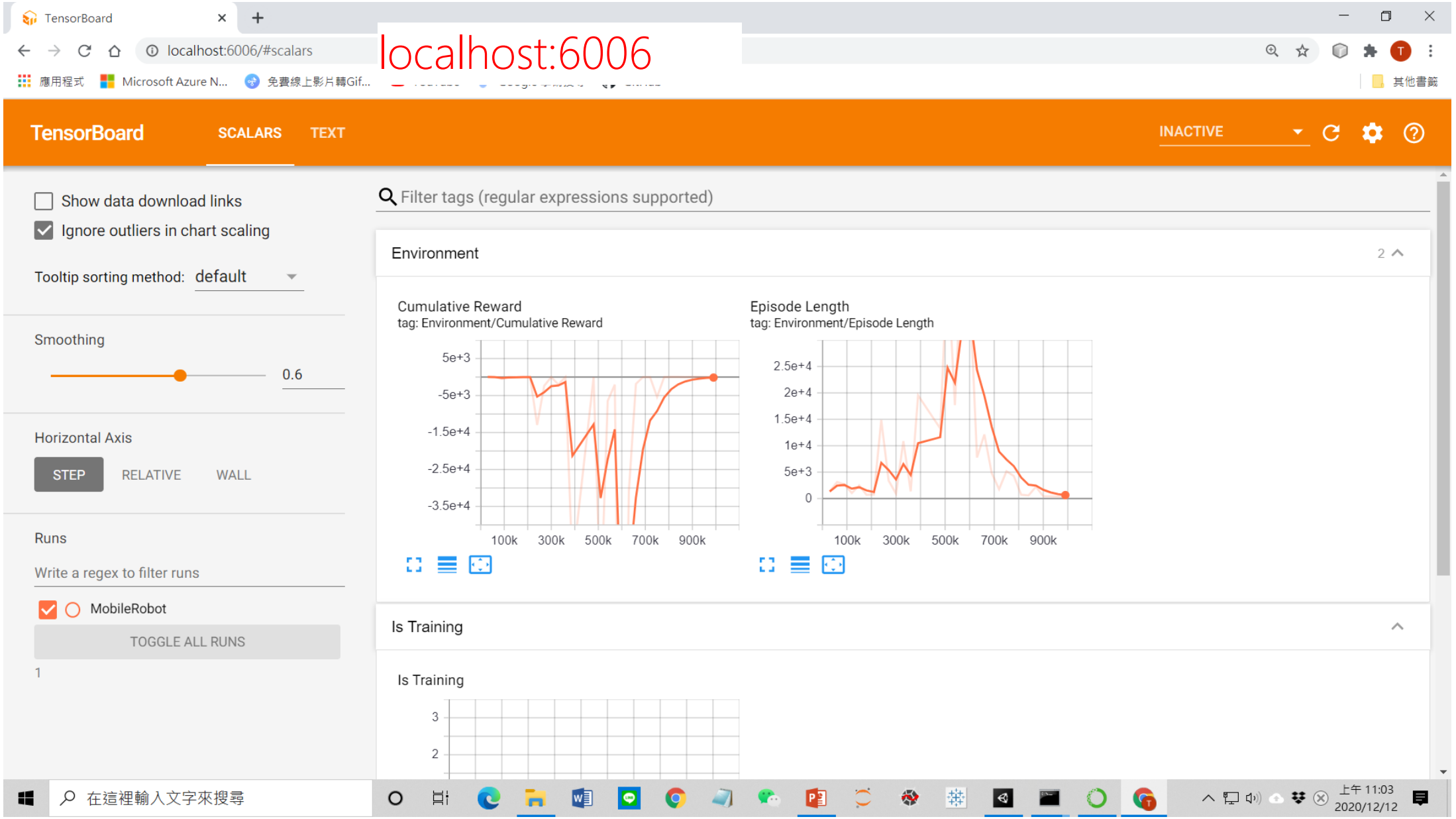
12. Monitor training performance

1. cd to the results folder (… ml-agents-release-10\config\ppo\results)
2. tensorboard --logdir=1

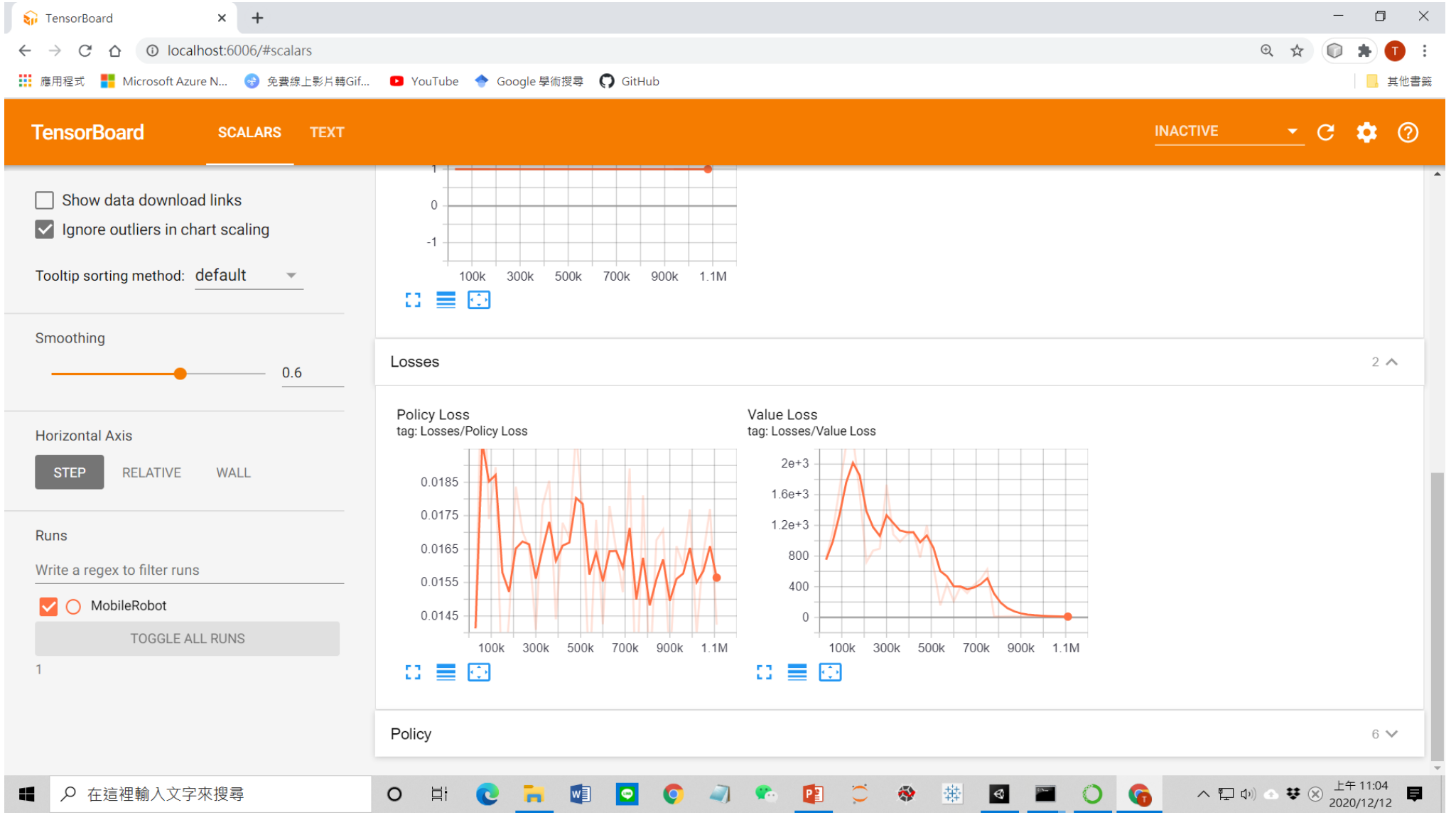




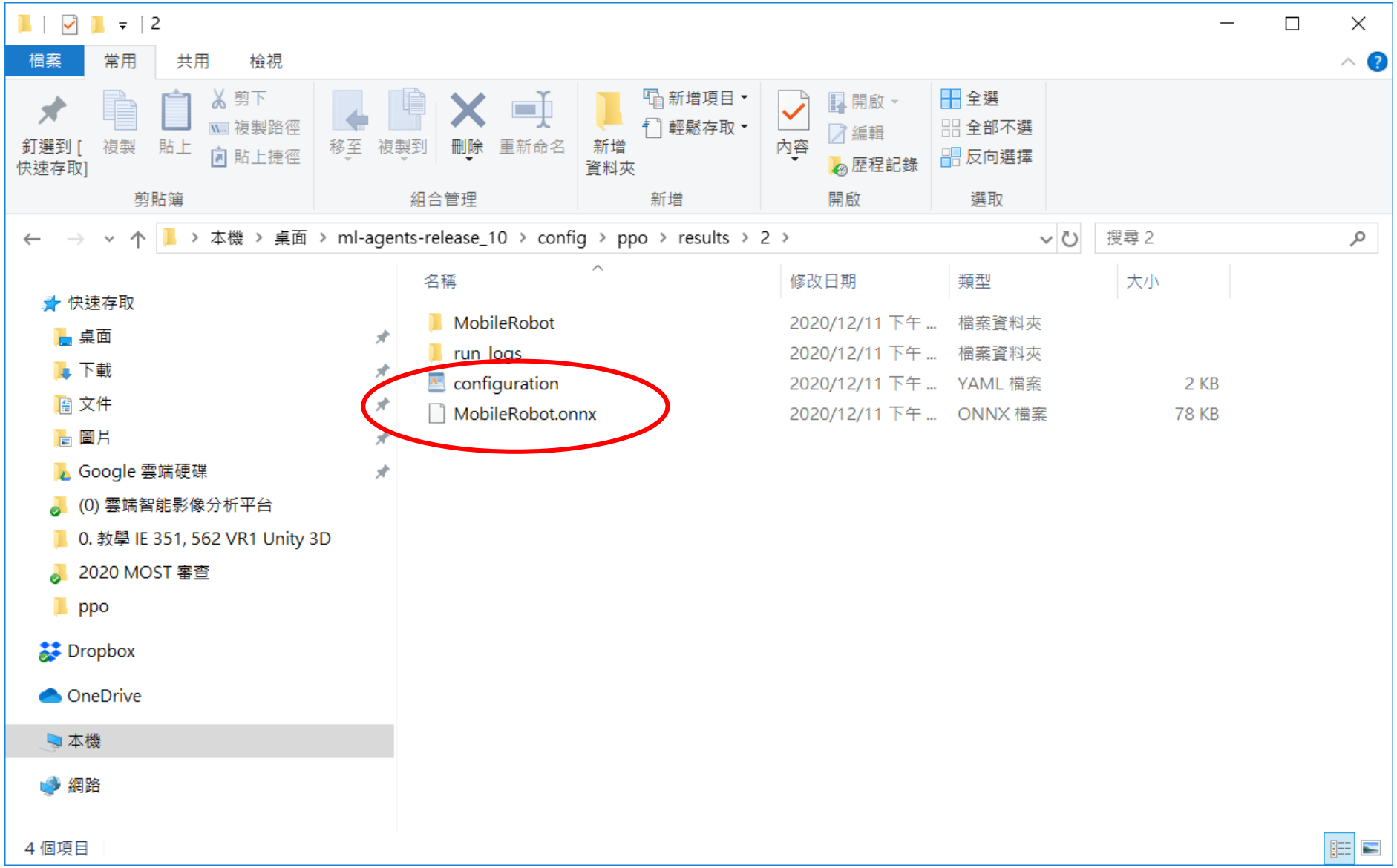
12. Monitor training performance



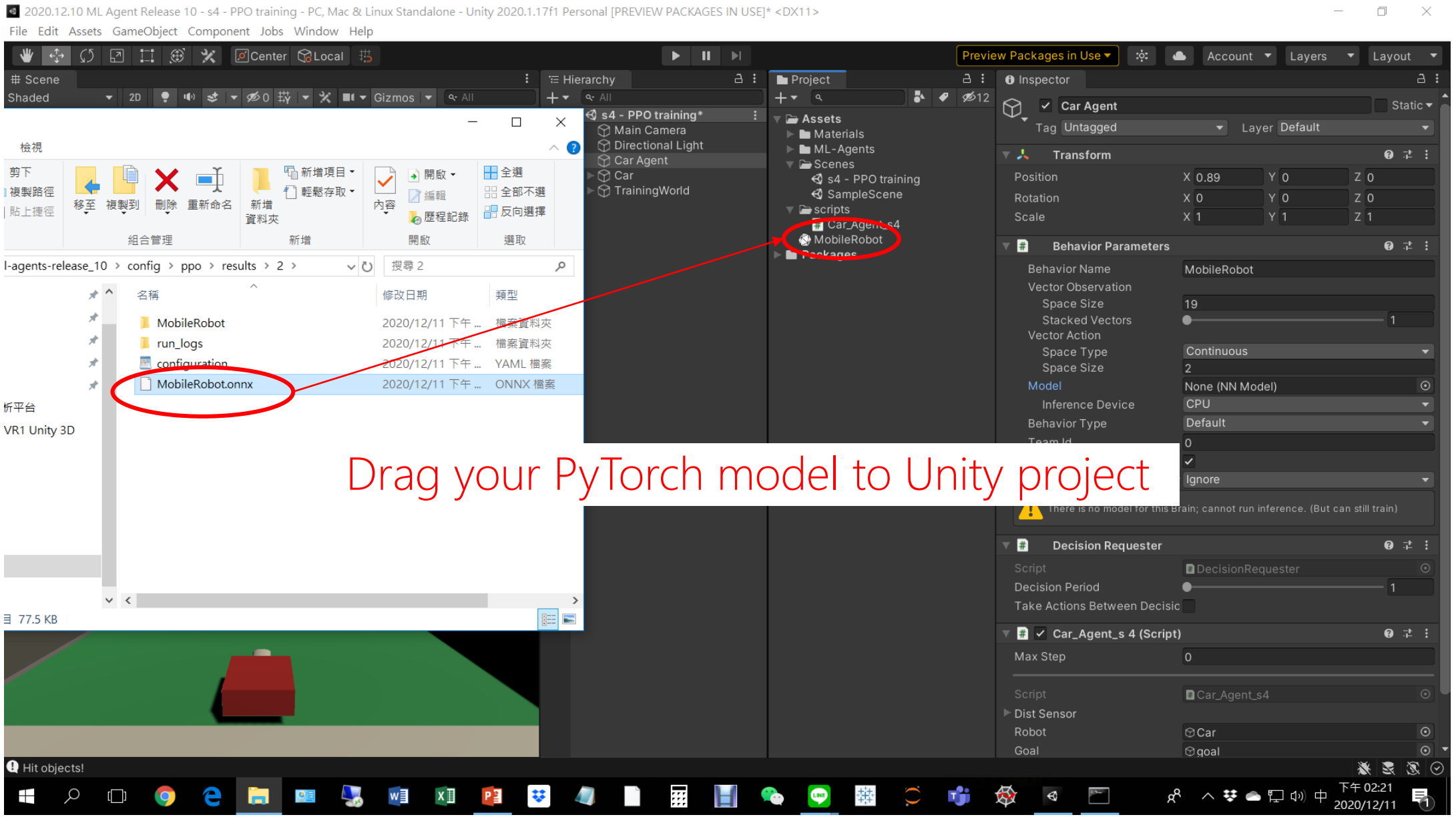
12. Monitor training performance



13. Finish training

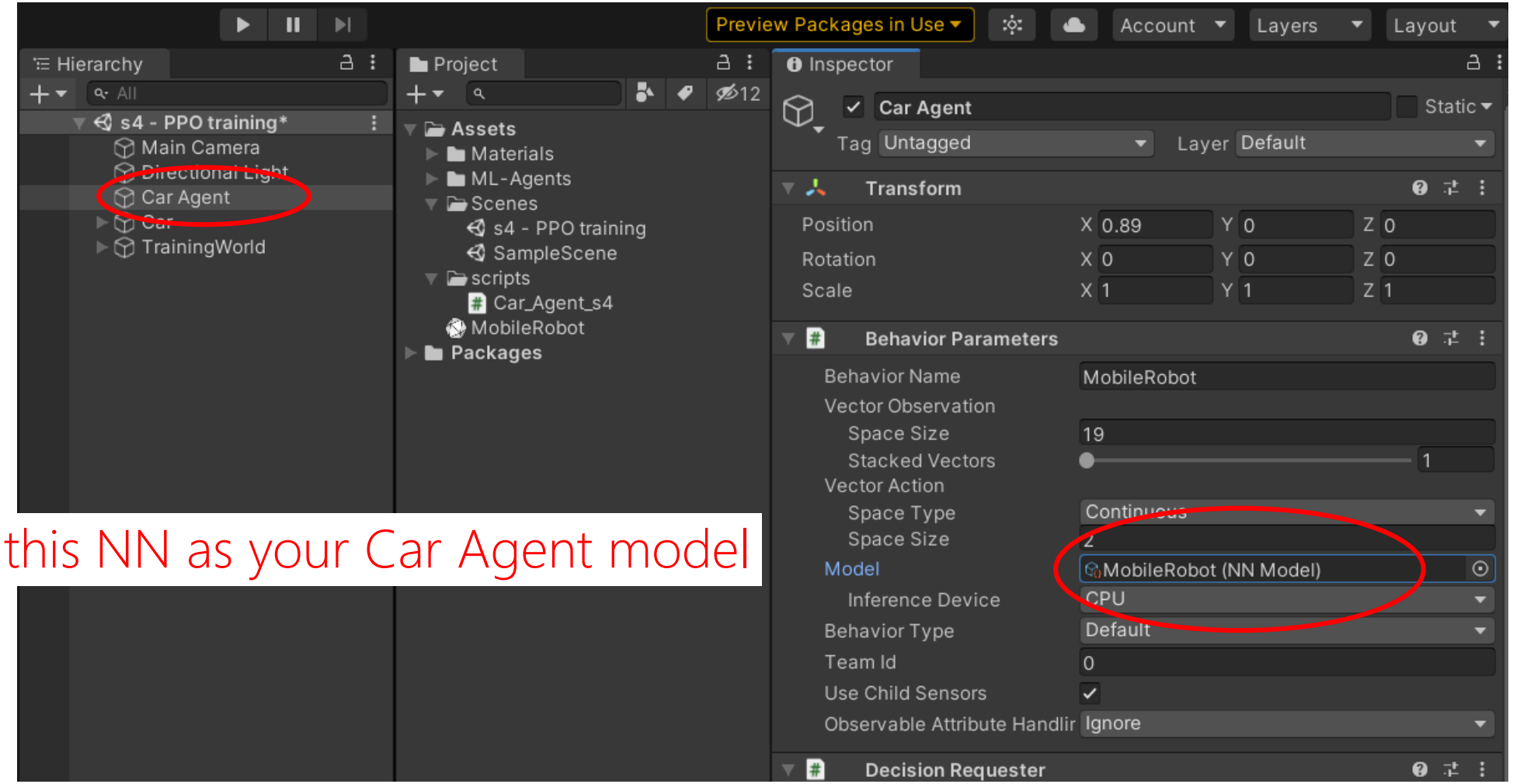


14. Test



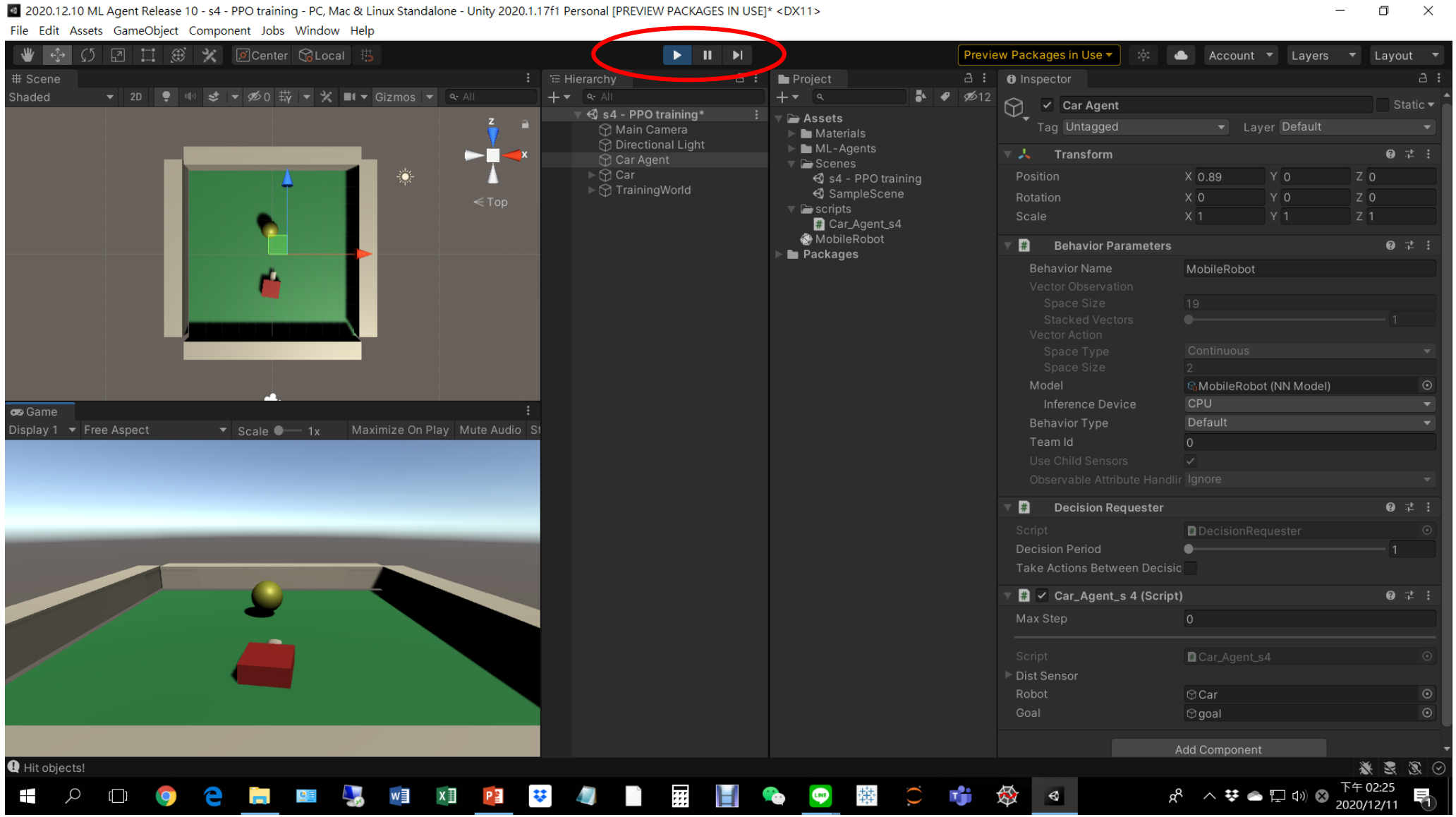
Drag your PyTorch model to Unity project

14. Test



Select this NN as your Car Agent model

14. Test


2020.12.10 ML Agent Release 10 - s4 - PPO training - PC, Mac & Linux Standalone - Unity 2020.1.17f1 Personal [PREVIEW PACKAGES IN USE]* <DX11>
File Edit Assets GameObject Component Jobs Window Help
Center Local
Preview Packages in Use
Account Layers Layout
Scene
Shaded 2D Gizmos All
Top
Hierarchy
All
s4 - PPO training*
Main Camera
Directional Light
Car Agent
Car
TrainingWorld
Project
Assets
Materials
ML-Agents
Scenes
s4 - PPO training
SampleScene
scripts
Car_Agent_s4
MobileRobot
Packages
Inspector
Car Agent
Static
Tag Untagged
Layer Default
Transform
Position X 0.89 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1
Behavior Parameters
Behavior Name MobileRobot
Vector Observation
Space Size 19
Stacked Vectors 1
Vector Action
Space Type Continuous
Space Size 2
Model MobileRobot (NN Model)
Inference Device CPU
Behavior Type Default
Team Id 0
Use Child Sensors
Observable Attribute Handlir Ignore
Decision Requester
Script DecisionRequester
Decision Period 1
Take Actions Between Decisic
Car_Agent_s 4 (Script)
Max Step 0
Script Car_Agent_s4
Dist Sensor
Robot Car
Goal goal
Add Component
Game
Display 1 Free Aspect Scale 1x Maximize On Play Mute Audio
Hit objects!
下午 02:25
2020/12/11