**CS 5392 Spring 2023 Assignment-1 Instructions-3**

We require Python with version 3.7 and Carla software with version 0.9.5 and Unreal Engine.
Open the terminal create a virtual environment and then

Here are the general steps for installing CARLA (Car Learning to Act) on Windows[1]:
Step 1: Install Dependencies

- Install Unreal Engine: Download and install Unreal Engine version 4.24, 4.25, or 4.26 from the official Unreal Engine website[4].
- Install Python: Download and install Python 3.7 or later (64-bit version) from the official Python website.
- Install CUDA Toolkit and cuDNN (optional): If you plan to use GPU acceleration for training, you will need to install CUDA Toolkit and cuDNN as per the NVIDIA's official documentation.

Step 2: Set up Unreal Engine

- Open Unreal Engine and create a new project.
- Close the Unreal Engine editor after the project is created.

Step 3: Clone CARLA Repository

- Open Git Bash or any other Git client on your Windows machine.
- Clone the CARLA repository from GitHub using the following command: git clone https://github.com/carla-simulator/carla.git
- Change directory to the CARLA repository: cd carla

download CARLA from http://carla.org/ or get the Carla package uploaded in our drive
https://drive.google.com/drive/folders/14hBbkOpA8PbkLc7JKArTQr8L_zz2c9-O?usp=share_link

If you have installed from the carla repositiry, make sure to copy our files from source_code directory to the following directory

Path to carla_root/pythonAPI/examples/

Or

If downloaded from the drive link-
, you will be able to see RLL.rar .You can extract the zip to get RLL.It has all the carla software in it along with our source code.You can find the sourcecode in

Path to carla_root/pythonAPI/examples/

**Upgrade the pip[5]:**

$ python -m pip install –upgrade pip.

after upgrading the pip install the necessary libraries.

$ pip install requirements.txt

requirements.txt has all the necessary libraries along with their versions that are sufficient to

Run the Carla and execute the code.

Once the software and all the necessary libraries are installed,

Open the Carla folder until root.
path to Carla root\
example: -
$ F:\RLL.

Double-click the CarlaEu4 application, it shows the Carla environment. [for Windows]

For Linux, launch a terminal in this folder and execute the simulator by running.

```
$ ./CarlaUE4.sh
```

To execute our developed code, go to the path.

path to Carla root\ PythonAPI\examples.

For example, as I have root in E drive,

F:\RLL\PythonAPI\examples.

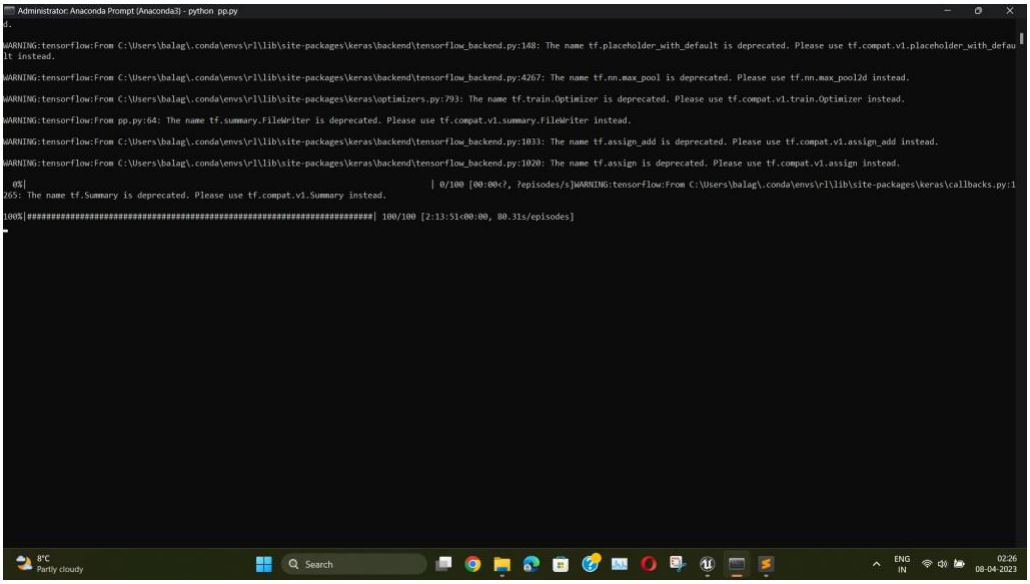
And then to the respective file

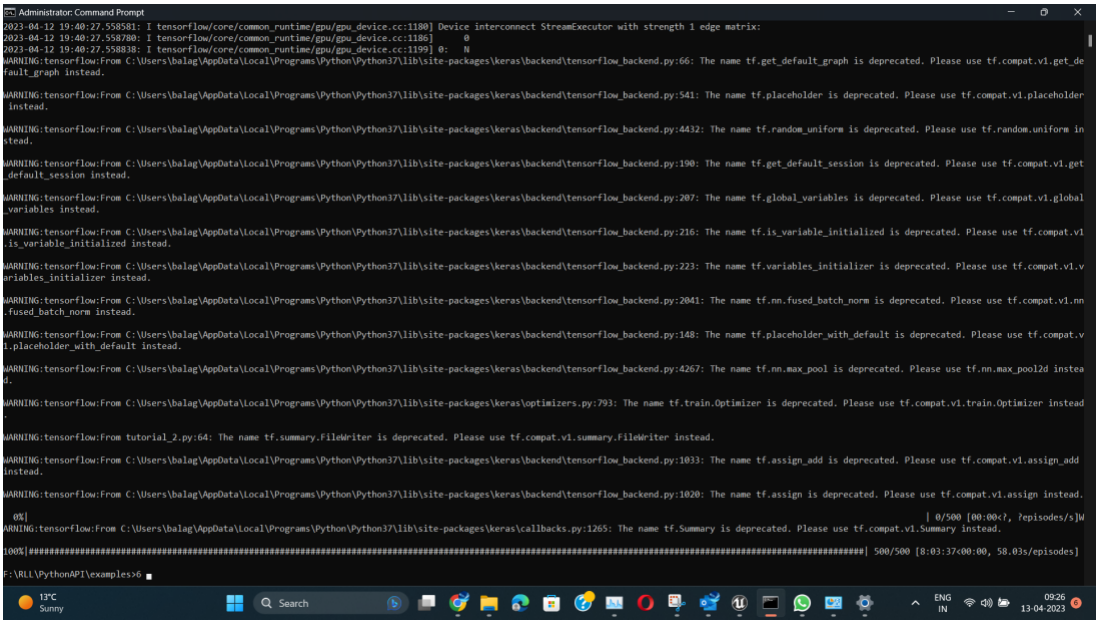
Run the following path in cmd with the file name. (you need to copy the rl and pedestrian files to here )

path to Carla root\ PythonAPI\examples\python tutorial_3.py

Example: -

F:\RLL\PythonAPI\examples>python tutorial_3.py



We have worked on three models, CNN 5 layered, Xception and a simple CNN model,But as we cannot train using everything at once, we used three functions to train. Please find the function name and change accordingly in dqn.py.If you wanted train on Xception, rename the create_model function to it train Xception

Walk through of the files:-

- We have all the constants declared in constants.py.
- We created Carla environment agent in car_env.py
- DQN agent is created in dqn.py
- Integrated all these in the tutorial_3.py

*References:-*

*[1] https://carla.readthedocs.io/en/latest/start_quickstart/*

*[2] Tensorboard [https://github.com/Noam2710/deep-q-learning/blob/master/ModifiedTensorBoard.py]*

*[3] pythonprogramming.net: https://www.youtube.com/watch?v=J1F32aVSYaU&list=PLQVvvaa0QuDeI12McNQdnTlWz9XlCa0uo*

*[4] Unreal Engine https://www.unrealengine.com/en-US/ue-on-github*

*[5] https://realpython.com/what-is-pip/*