CE889: Neural Networks and Deep Learning

LAB 2: ASSIGNMENT INTRODUCTION AND DATA COLLECTION

HEAD OF MODULE:

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Introduction to the assignment
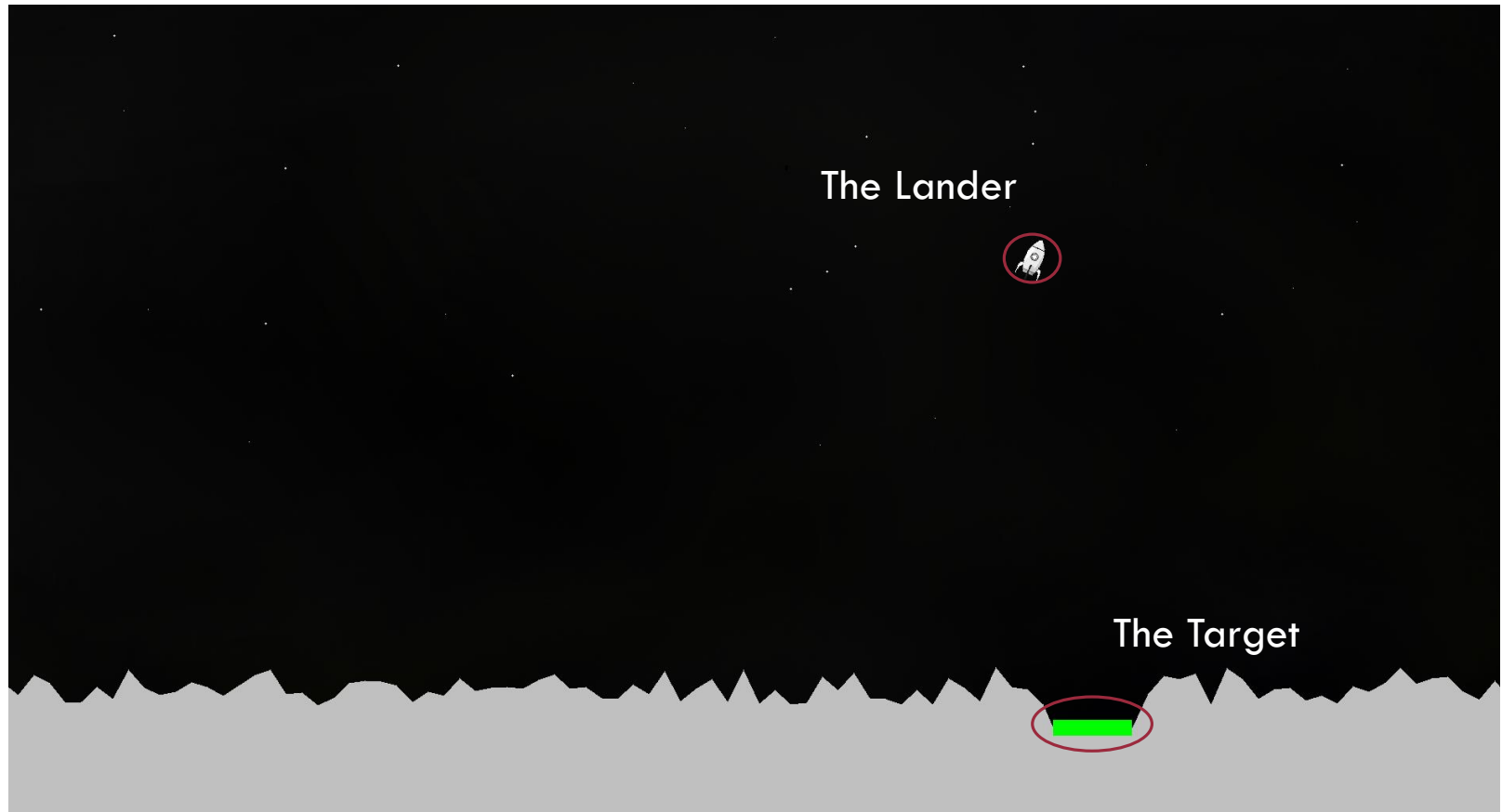
Lesson Aims:

- Assignment Outline
  - The Game
  - Collecting data
  - Understanding how a NN will play the game

The objective of the game:
    Steer and apply thrust to the lander.
    Avoid hitting the outside edge or the ground.
    Safely put the lander on the target to proceed.

The Lander

The Target

The Game - Objectives

Input variables

| Name	Data type	Information
X distance to target	Double	X distance in pixels to the target
Y distance to target	Double	Y distance in pixels to the target

Output variables

Name	Data type	Information
Velocity X	Double	Pixels per second
Velocity Y	Double	Pixels per second

Data collection - Specifics

Each run of the game is added to the same file once the game has been closed.

The data in output to the ce889_dataCollection.csv file

You need to collect data multiple time to ensure there is enough data for the NN to learn from.
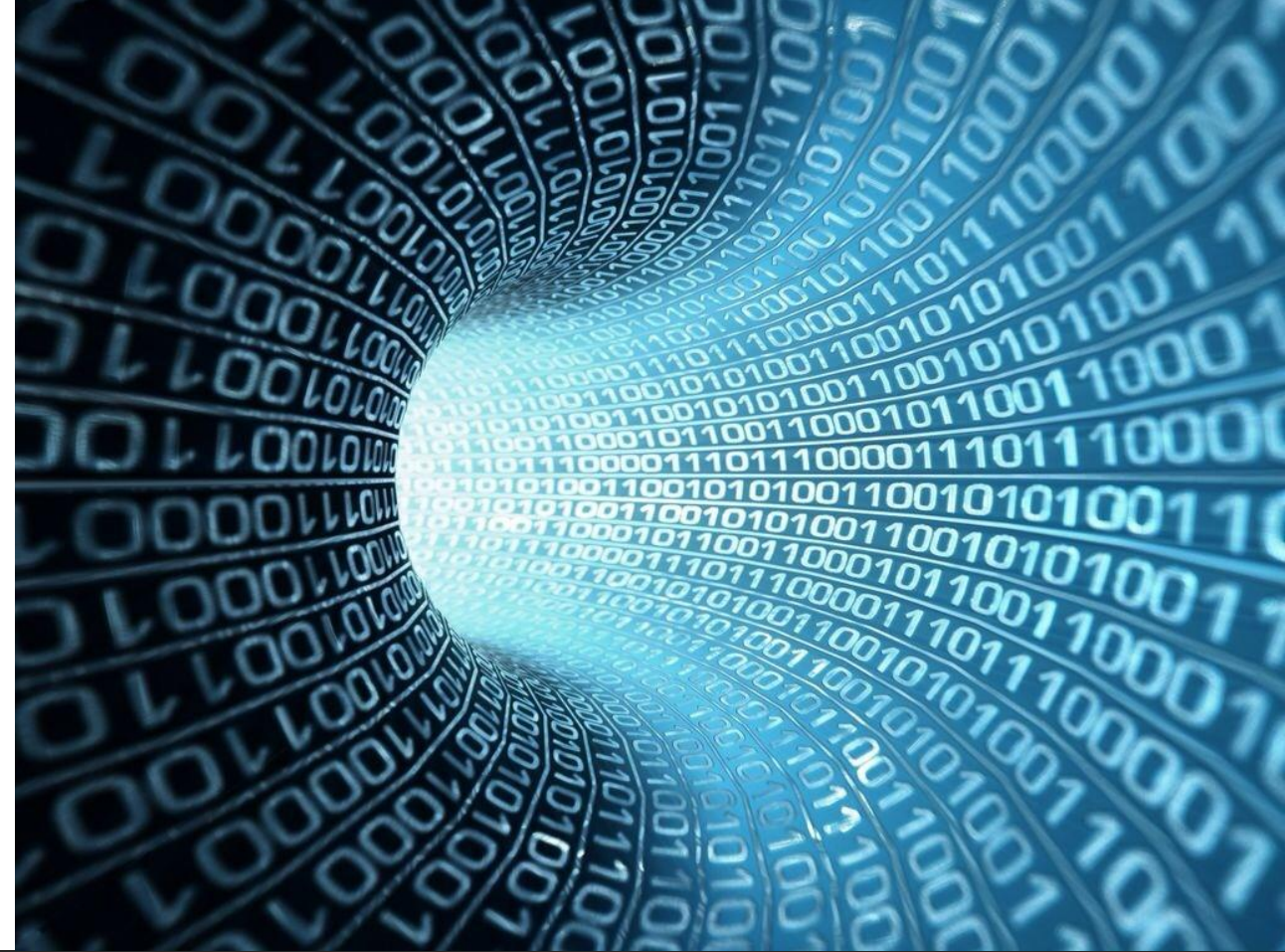
Data collection - Specifics

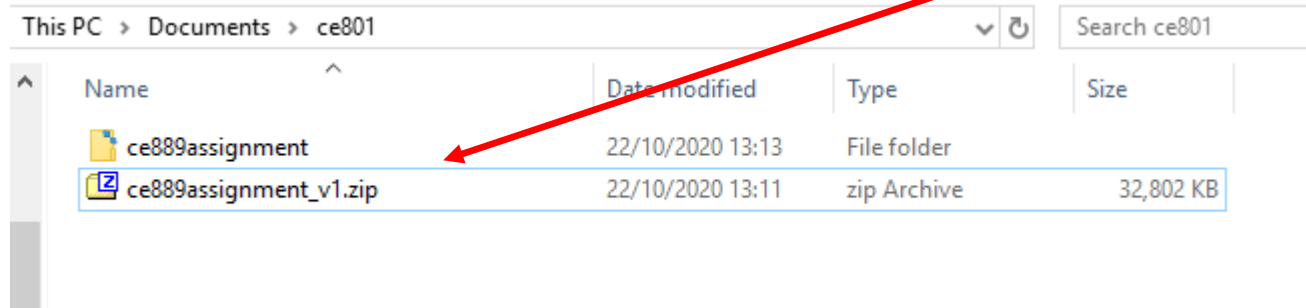Normalisation

    All data need to be scaled between 0-1

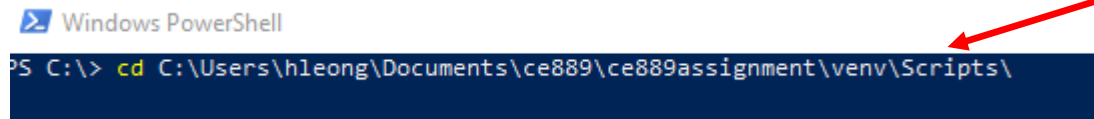Cleaning

    Any inconsistent data should be removed or replaced

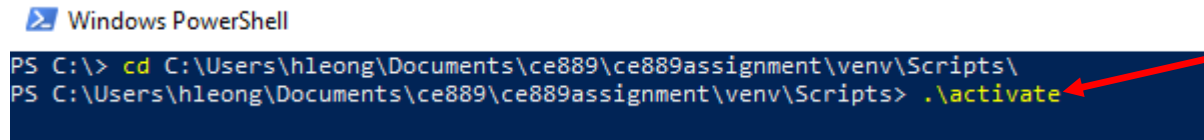Split the Data into Training & Validation sets.

Tips for data processing

- Unzip the folder

- Open powershell
- Change directory to the folder venv/Scripts/ inside the folder you just unzip

Activate the python virtual environment

Running the program

Go back to the main folder of the project

Install requirements
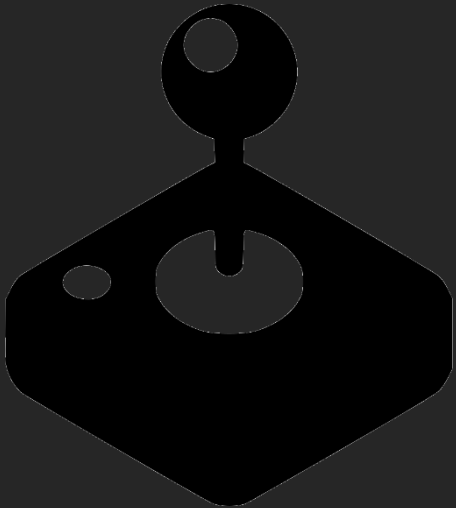
Run the project by executing Main.py

Running the program

Link to download data collection game project

https://essexuniversity-my.sharepoint.com/:f:/g/personal/ljbeas_essex_ac_uk/Es0Xyo5kcChHvMPGuDhtv38Bsyew3UfFUPTM2I9YMZRFVg?e=Rds9RC

Your Tasks...

1. Play the game and familiarise yourself with the game.

2. Play the game and collect the data for your NN.

3. Pre-process the data.