National College of Ireland

Configuration Manual

A Deep Learning Recommender System for Anime

M.Sc. in Data Analytics

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MSc Project Submission Sheet

School of Computing

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Configuration Manual

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1 Introduction

This documentation provides all necessary procedures for reproducing the results of the project Deep Learning Recommender System for Anime. This paper also includes hardware specifications and system requirements that might be regarded a minimal system specification for research work.

2 System Prerequisites

2.1 Configuration of Hardware used

The setup of the Dell laptop that was utilized for this research project is shown in Figure 1. The laptop is equipped with an Intel Core i7-8550U CPU @ 1.80GHz, 8 GB of RAM, and a 1 TB hard drive. The operating system is Windows 10 Home edition.

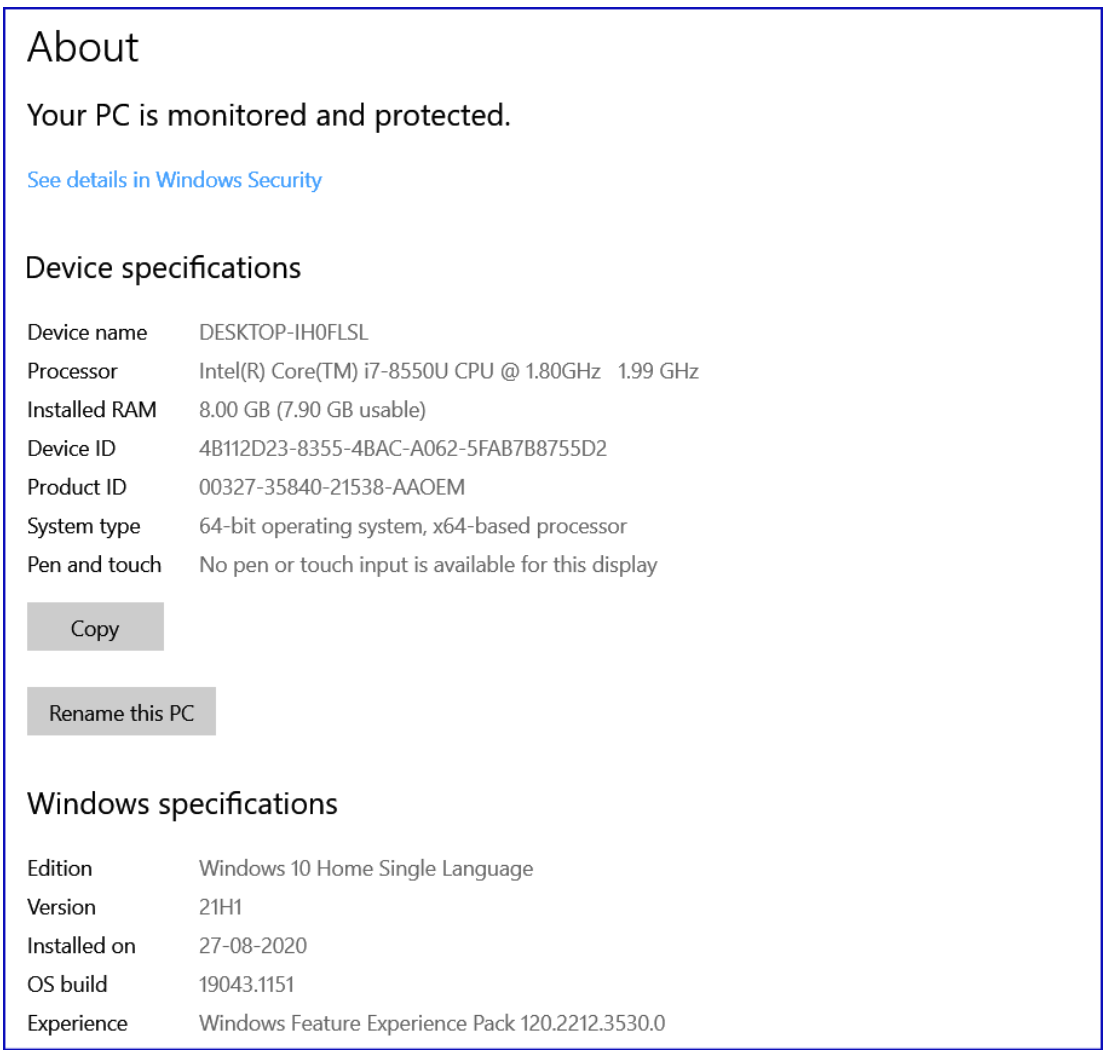

Figure 1. The configuration of system used to run the model.

2.2 Configuration of Software

To execute the project, Google Collaborator is used. All download and installation methods are explained in the next section.

3 Setup of the Environment

3.1 Google Notebook for Collaboration

The hardware arrangement of the laptop was not enough to run profound educational models. Thus, Google Collab is used to execute all the deep learning models of the project efficiently. Follow the below steps to build a partnership with Google (collab).

1. Gmail account is necessary to execute the Google Collaboratory model.

2. This link is opened by Google Chrome and the following screen is shown.

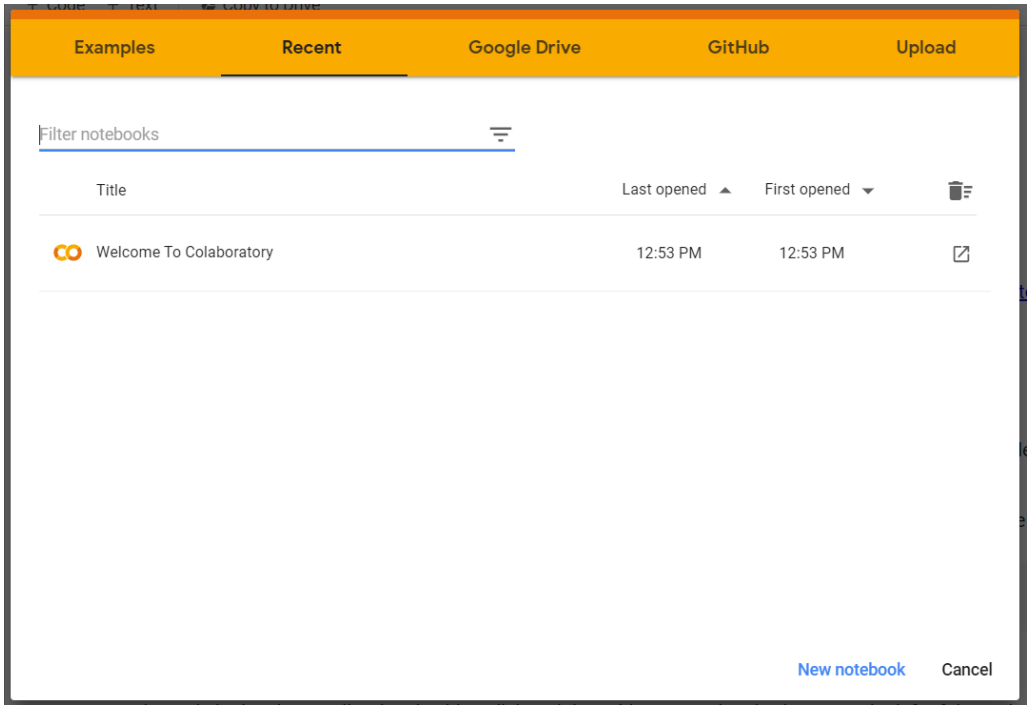

Figure 2. Create a new notebook.

3. Choose New Notebook or Upload to use existing notebooks.

4. Change the notebook type to TPU after creating a notebook.
   Click on Runtime for this button and click on Runtime type changing.

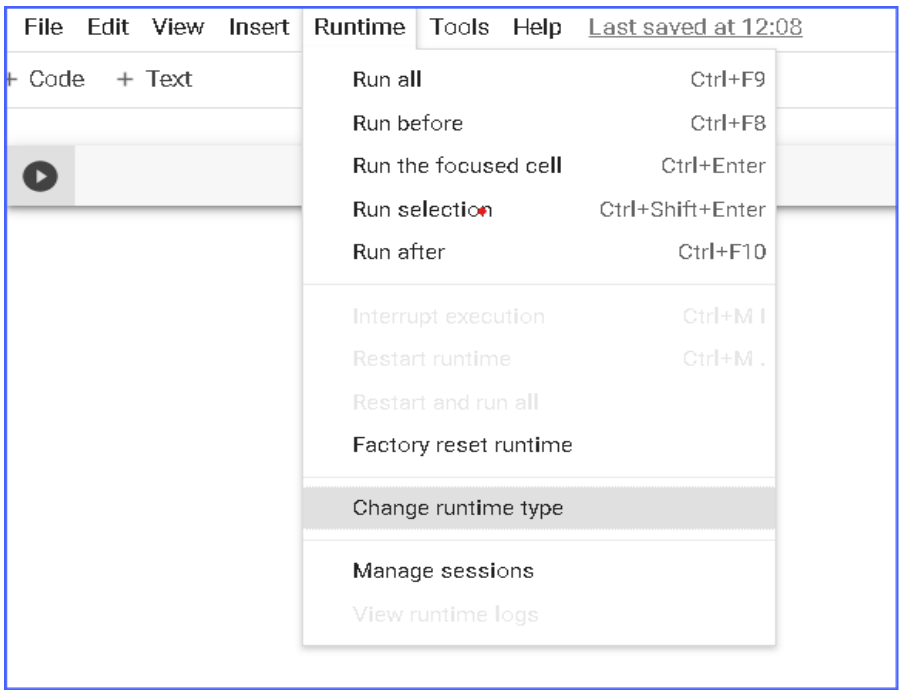

Figure 3. Based on the requirements change the runtime type.

5. Then click Save after selecting TPU.

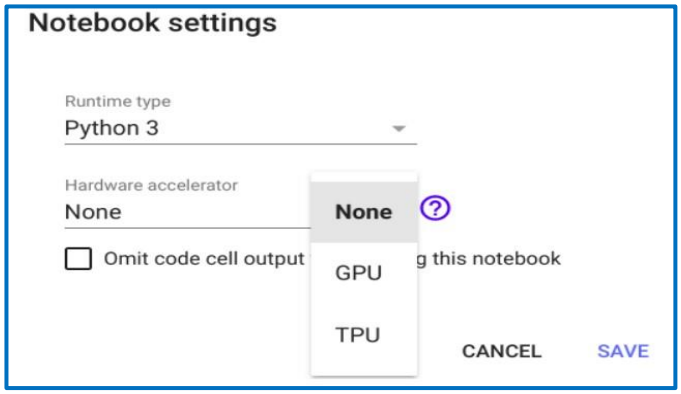

Figure 4: Settings for the Runtime

6. Then select Connect to hosted runtime from the dropdown menu of the Connect button.

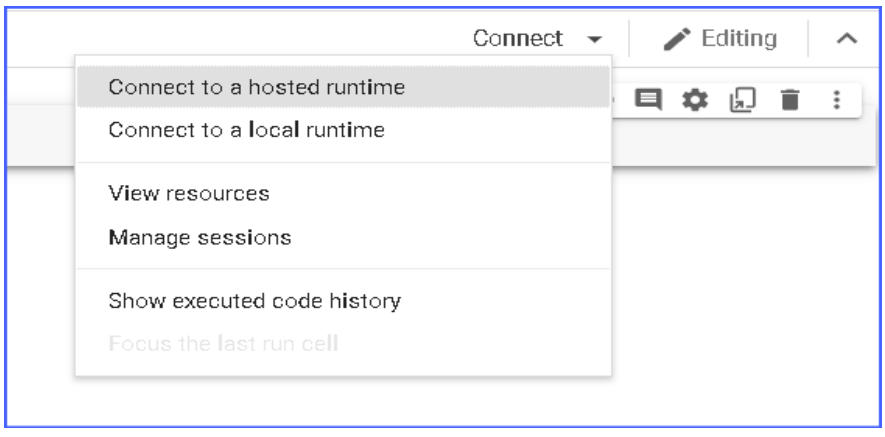

Figure 5. Use Google's Infrastructure to connect to it.

7. These lines of codes help in mounting the drive where your code and dataset are stored. Click on the link generated which is shown in figure below:

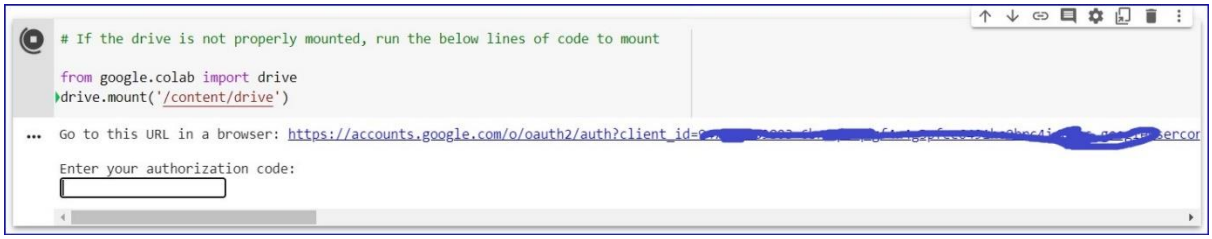

Figure 6. Mounting the Google Drive.

8. Select the Gmail account you would like to use and sign in and allow access.

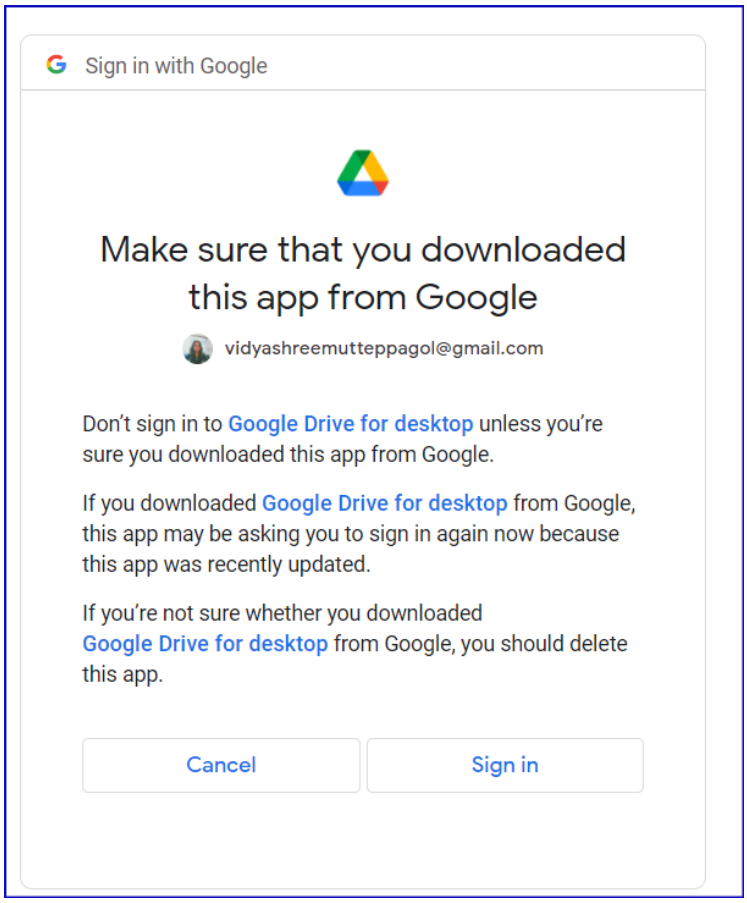

Figure 7. Sign in the Gmail account and provide access.

9. Copy the code provided into the text box in the notebook and run it.

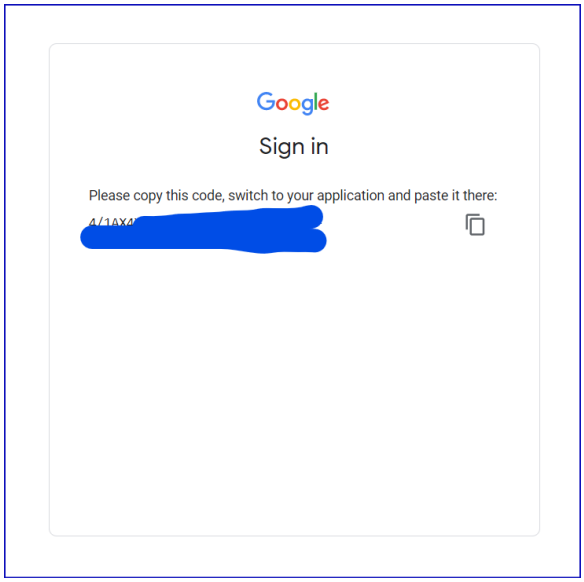

Figure 8. Copy the Google code.

10. Once the code is pasted in the text box in the notebook and run, the drive will be mounted and all the folders inside will be available to use with the Google Collab notebook.

11. Info on the dataset used - The dataset is 14.94 GB in total size. The following is a detailed data set, Csv's average of 6.88 GB, csv is averages 5.39 GB, and animelist.csv is 1.89 GB, and csv's average rating of 780 MB. The model must be processed in the Google laboratory to run this magnitude of the dataset.

12. Now ***Run all*** option from the Runtime in Google Collab should help you execute the whole notebook. The model training will take time for all the epochs to be run.

13. Once all the cells have completed execution, anime recommendations will be generated and MSE, MAE and Loss will printed at the end of the notebook.

14. Last but one cell generates ranking-wise recommendations as shown in figure below:

```
Recommendations for user: 100919 based on rankings
================================================================================
--------------------------------------------------------------------------------
=> Top Anime Recommendations
--------------------------------------------------------------------------------
```

	name	pred_rating	genre	
2	Usavich V	0.766885	Comedy	
1	The Familiar of Zero:Rondo of Princesses	0.497304	Action, Adventure, Harem, Comedy, Magic, Romance, Ecchi, Fantasy, School	Following his brave sacrifice in t Blanc de La Vallière. With their venturing to a castle, l appearance. The mystical and u Moreover, she realizes that Sait between for
0	Kekkou Kamen	0.378737	Comedy, Ecchi	he academy Miami Takashi at identities and special detention voted "Least Likely to Survive mask, red boots and nothing els chopped pork out of the s

Figure 9. Ranking based anime recommendations.

15. Last cell prints the evaluation metrics as shown in figure below:

```
# Printing the MSE, MAE and the Loss of the model using the Sigmoid Activation function

score = model.evaluate(X_test_array, y_test)

print()
print(score)
```

```
313/313 [==============================] - 8s 22ms/step - loss: 0.4842 - mae: 0.1909 - mse: 0.0700

[0.48422756791114807, 0.1909279078245163, 0.06995591521263123]
```

Figure 10. Evaluation metrics printed.

16. Follow the same process for another notebook which has the ReLU activation function experiment.