Configuration Manual

MSc Research Project
Data Analytics

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Configuration Manual

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1 Indroduction

This document encompasses all the details which are required to reproduce the outcome of the research project Deep Learning-Based Anime and Movie Recommendation System. The document also consists of the minimum system requirements which is necessity to implement this project.

2 System Specification

This project was implemented using Dell laptop with 8gb ram, 11th Gen Intel(R) Core(TM) i5-1135G7 @ 2.40GHz 2.42 GHz processor and 64 bit,x64 based processor windows operating system,1TB hard disk drive and 500MB solid state drive. The figure 1 shows the system specification

Figure 1: System Specification

3   Software Requirements

To carryout this project the minimum software requirements which are necessary is shown in the figure2

Software Requirements	Details
Language	Python with version 3.9.7
IDE	Anaconda Environment/ Jupyter Notebook
Data pre-processing and Exploratory Data Analysis	NumPy, Pandas
Visualization	Seaborn, Matplotlib and WordCloud
Modelling	TensorFlow with version 2.8.0 and Keras

Figure 2: Software Requirements

4   Download and Installing the Anaconda Environment

Anaconda Navigator could be downloaded and installed with the following steps

- The anaconda navigator could be downloaded using the link `https://docs.anaconda.com/anaconda/install/windows/`

- After completing the installation process, the installation can be verified using the link `https://docs.anaconda.com/anaconda/install/verify-install/`.

- Once the installation is verified,open the Anaconda Navigator and click on the Jupyter Notebook icon.

5   Downloading the Required Files

The file which are used to run the code can be downloaded from the following links

- `https://grouplens.org/datasets/movielens/20m/`

- `https://www.kaggle.com/datasets/hernan4444/anime-recommendation-database-2020`

   The files which were used in this project were rating-complete.csv, anime.csv,anime-with-synopsis.csv from anime-recommendation-database-2020 dataset and rating.csv, movie.csv from movielens-20M dataset.

6 Evaluation

After finishing the execution loss curve will be plotted which is shown in figure 3 and 4. The overall outcome of the model is shown in the figure 5.Finally the top 'n' recommendation along with the predicted rating for the anime and movies which were not rated by the user is generated for a random user within the system which is shown in the figure 7 and 8
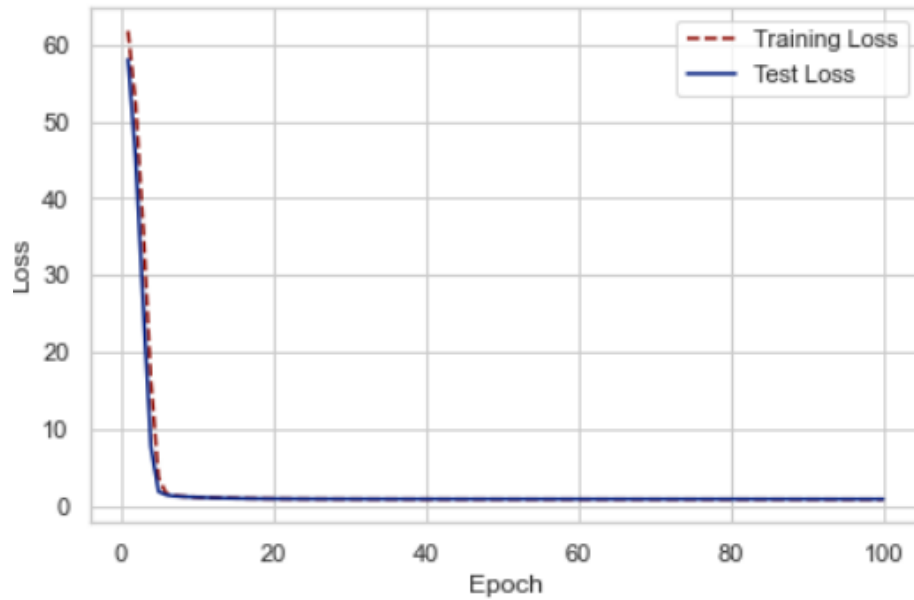

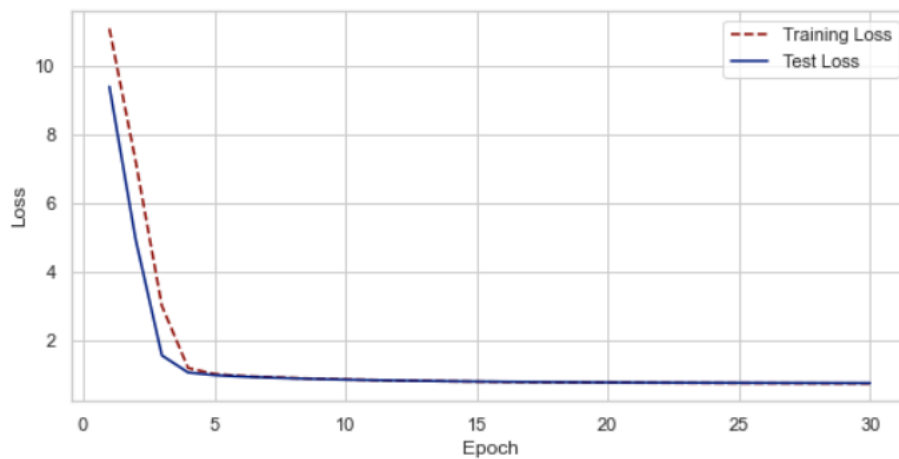Figure 3: Loss curve for the anime rating prediction

Figure 4: Loss curve for the movie rating prediction

Dataset	Metric	Training set	Validation Set
Anime Recommendation Database 2020	Mean Square Error (MSE)	0.8725	0.8872
Anime Recommendation Database 2020	Mean Absolute Error (MAE)	0.7431	0.7492
Movielense-20M	Mean Square Error (MSE)	0.7306	0.7417
Movielense-20M	Mean Absolute Error (MAE)	0.6556	0.6606

Figure 5: Outcome of the model

	anime_id	Name	English name	Type	Genres	Synopsis	predicted_rating
0	740	Bishoujo Senshi Sailor Moon R	Sailor Moon R	TV	Demons, Magic, Romance, Shoujo	Usagi Tsukino and her friends have been living...	9.666265
1	5673	Apfelland Monogatari	Appleland Story	Movie	Adventure, Historical, Drama	pfelland is a small but beautiful country surr...	9.296709
2	6463	Hoshi wo Katta Hi	The Day I Bought a Star	Movie	Sci-Fi, Kids	oung boy, tired of the city, escapes into the ...	9.272595
3	9863	SKET Dance	SKET Dance	TV	Comedy, School, Shounen	Kaimei High School there is a special club ded...	9.084867
4	427	Kaleido Star	Kaleido Star	TV	Comedy, Sports, Drama, Fantasy, Shoujo	The Kaleido Stage is known throughout the worl...	9.013369
5	238	Rekka no Honoo	Flame of Recca	TV	Action, Adventure, Martial Arts, Shounen, Supe...	ost people think that ninjas are a thing of th...	8.995009
6	1818	Claymore	Claymore	TV	Action, Adventure, Super Power, Demons, Supern...	hen a shapeshifting demon with a thirst for hu...	8.931616
7	25	Sunabouzu	Desert Punk	TV	Action, Adventure, Comedy, Ecchi, Sci-Fi, Shounen	The Great Kanto Desert, a sweltering wasteland...	8.926864
8	6571	Koume-chan ga Iku!	Here Comes Koume!	TV	Comedy, Romance, Slice of Life	Koume is a new Office Lady (OL), an employee o...	8.833509
9	313	Ace wo Nerae! (1979)	Aim for the Ace! (1979)	Movie	Sports, Drama, Romance, School, Shoujo	High school freshman Hiromi joins the tennis c...	8.825645

Figure 6: Recommendation of Anime

	anime_id	Name	English name	Type	Genres	Synopsis	predicted_rating
0	5673	Apfelland Monogatari	Appleland Story	Movie	Adventure, Historical, Drama	pfelland is a small but beautiful country surr...	9.296709
1	6463	Hoshi wo Katta Hi	The Day I Bought a Star	Movie	Sci-Fi, Kids	oung boy, tired of the city, escapes into the ...	9.272595
2	313	Ace wo Nerae! (1979)	Aim for the Ace! (1979)	Movie	Sports, Drama, Romance, School, Shoujo	High school freshman Hiromi joins the tennis c...	8.825645
3	791	Arion	Arion	Movie	Action, Adventure, Fantasy, Magic, Drama, Seinen	In Thrace, Arion is taken from his mother Deme...	8.747345
4	304	Aa! Megami-sama! Movie	Ah! My Goddess:The Movie	Movie	Comedy, Magic, Romance, Seinen, Supernatural	For centuries, a god named Celestin has been i...	8.666540
5	5096	Doraemon Movie 28: Nobita to Midori no Kyojin Den	Doraemon the Movie:Nobita and the Green Giant ...	Movie	Adventure, Comedy, Fantasy, Kids, Shounen	One day Nobita found a small sapling behind th...	8.655970
6	936	Naruto Movie 2: Dai Gekitotsu! Maboroshi no Ch...	Naruto the Movie 2:Legend of the Stone of Gelel	Movie	Adventure, Comedy, Drama, Fantasy, Shounen, Su...	Naruto, Shikamaru, and Sakura are executing th...	8.622528
7	437	Perfect Blue	Perfect Blue	Movie	Dementia, Drama, Horror, Psychological	J-pop idol group CHAM! has spent the last two ...	8.619439
8	16786	Bulsajo Robot Phoenix King	Defenders of Space	Movie	Action, Space, Mecha, Shounen	No synopsis information has been added to this...	8.605611
9	536	Slayers: The Motion Picture	Slayers:The Motion Picture	Movie	Adventure, Comedy, Magic, Fantasy, Shounen	In this prequel movie to the Slayers televison...	8.558195

Figure 7: Recommendation of Anime which belong only 'Movie' tye

	movieId	title	genres	predicted_rating
0	843	Lotto Land (1995)	Drama	4.035169
1	1935	How Green Was My Valley (1941)	Drama|Musical|Romance	3.967813
2	1155	Invitation, The (Zaproszenie) (1986)	Drama	3.953854
3	905	It Happened One Night (1934)	Comedy|Romance	3.950073
4	2943	Indochine (1992)	Drama|Romance	3.948989
5	1186	Sex, Lies, and Videotape (1989)	Drama	3.948775
6	7356	Night Crossing (1981)	Drama	3.939668
7	5917	Zoot Suit (1981)	Drama|Musical	3.933633
8	3346	Color Me Blood Red (1965)	Horror	3.931484
9	1232	Stalker (1979)	Drama|Mystery|Sci-Fi	3.918402

Figure 8: Recommendation of Movies