

# *Harpy Aerospace Summer Internship*

## *AIOT project Recommendation system*

Seshavarshan M

Madras Institute of Technology

2022506109


B. Tech Information technology

07/04/2024

## LOADING THE DATASET

Downloading and preparing dataset 4.70 MiB (download: 4.70 MiB, generated: 32.41 MiB, total: 37.10 MiB) to /root/tensorflow\_datasets/movielens/100k-ratings/0.1.1...

DI Completed...: 100%  1/1 [00:03<00:00, 3.35s/ url]

DI Size...: 100%  4/4 [00:03<00:00, 2.69s/ MiB]

Extraction completed...: 100%  23/23 [00:03<00:00, 3.46s/ file]

Dataset movielens downloaded and prepared to /root/tensorflow\_datasets/movielens/100k-ratings/0.1.1. Subsequent calls will reuse this data.

Downloading and preparing dataset 4.70 MiB (download: 4.70 MiB, generated: 150.35 KiB, total: 4.84 MiB) to /root/tensorflow\_datasets/movielens/100k-movies/0.1.1...

DI Completed...: 100%  1/1 [00:00<00:00, 12.24 url/s]

DI Size...: 100%  4924029/4924029 [00:00<00:00, 77513002.85 MiB/s]

Extraction completed...:  0/0 [00:00<?, ? file/s]

Dataset movielens downloaded and prepared to /root/tensorflow\_datasets/movielens/100k-movies/0.1.1. Subsequent calls will reuse this data.

---

## Viewing dataset:

Ratings Dataset:

User ID: b'138'

Movie Title: b"One Flew Over the Cuckoo's Nest (1975)"

---

User ID: b'92'

Movie Title: b'Strictly Ballroom (1992)'

---

User ID: b'301'

Movie Title: b'Very Brady Sequel, A (1996)'

---

User ID: b'60'

Movie Title: b'Pulp Fiction (1994)'

---

User ID: b'197'

Movie Title: b'Scream 2 (1997)'

---

---

MODEL TRAINING :

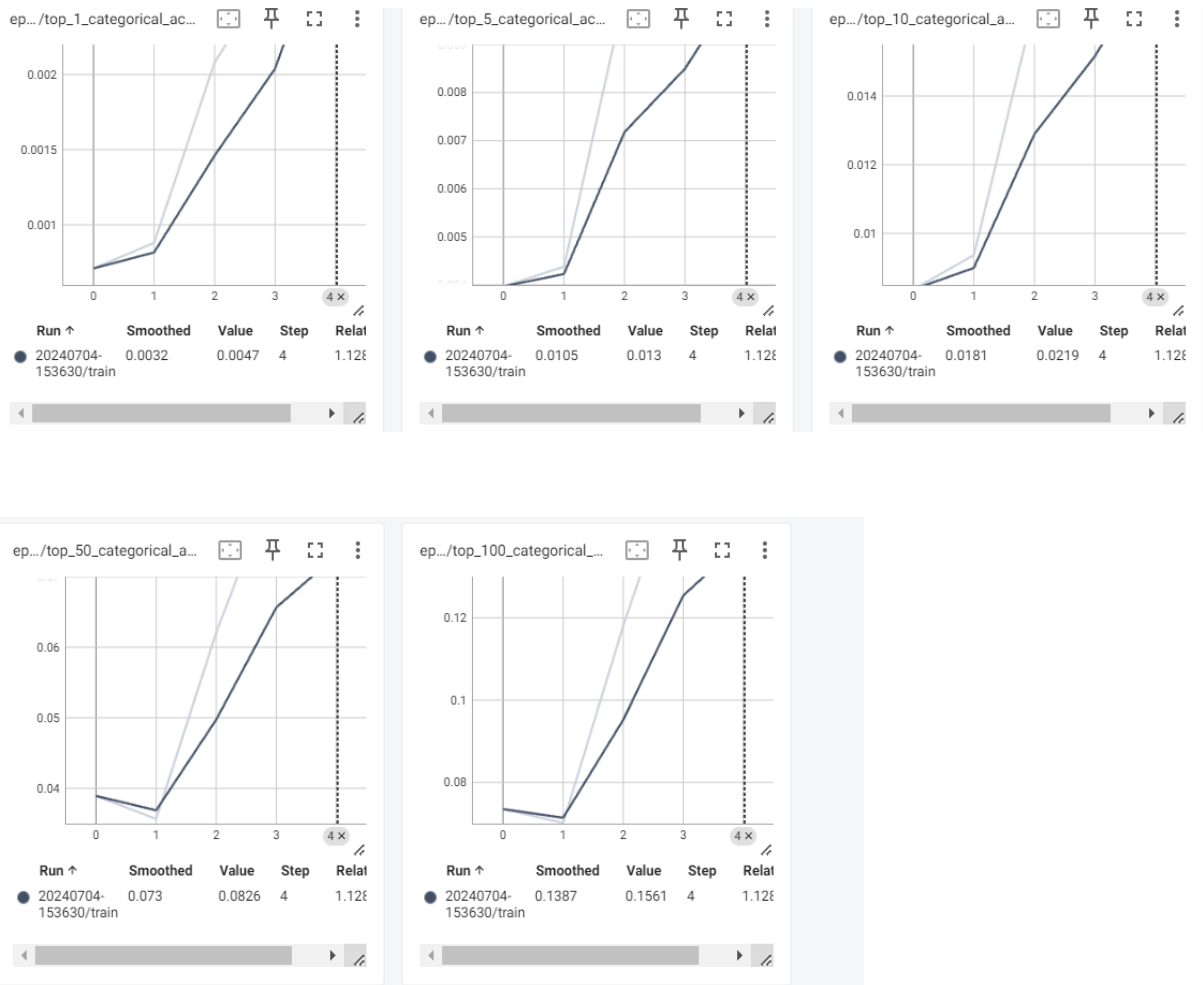
Epoch 1/5  
25/25 [=====] - 19s 706ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 3.5000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0022 - factorized\_top\_k/top\_10\_categorical\_...  
Epoch 2/5  
25/25 [=====] - 16s 640ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 3.1000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0022 - factorized\_top\_k/top\_10\_categorical\_...  
Epoch 3/5  
25/25 [=====] - 16s 640ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 2.8000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0022 - factorized\_top\_k/top\_10\_categorical\_...  
Epoch 4/5  
25/25 [=====] - 17s 691ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 3.6000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0023 - factorized\_top\_k/top\_10\_categorical\_...  
Epoch 5/5  
25/25 [=====] - 16s 642ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 4.0000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0023 - factorized\_top\_k/top\_10\_categorical\_...  
Epoch 1/5  
25/25 [=====] - 19s 698ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 0.0160 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0239 - factorized\_top\_k/top\_10\_categorical\_acci...  
Epoch 2/5  
25/25 [=====] - 16s 619ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 0.0012 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0063 - factorized\_top\_k/top\_10\_categorical\_acci...  
Epoch 3/5  
25/25 [=====] - 15s 615ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 0.0016 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0087 - factorized\_top\_k/top\_10\_categorical\_acci...  
Epoch 4/5  
25/25 [=====] - 16s 622ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 0.0018 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0094 - factorized\_top\_k/top\_10\_categorical\_acci...  
Epoch 5/5  
25/25 [=====] - 16s 618ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 0.0016 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0097 - factorized\_top\_k/top\_10\_categorical\_acci...  
<keras.src.callbacks.History at 0x7930a521dff0>

EVALUATING MODELS:

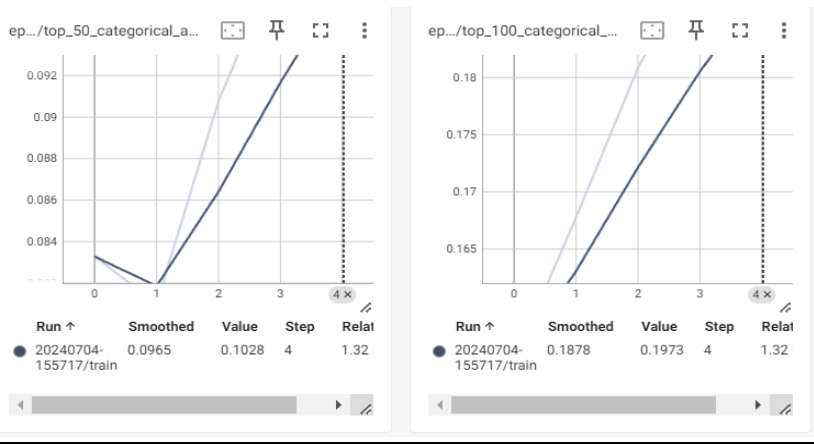
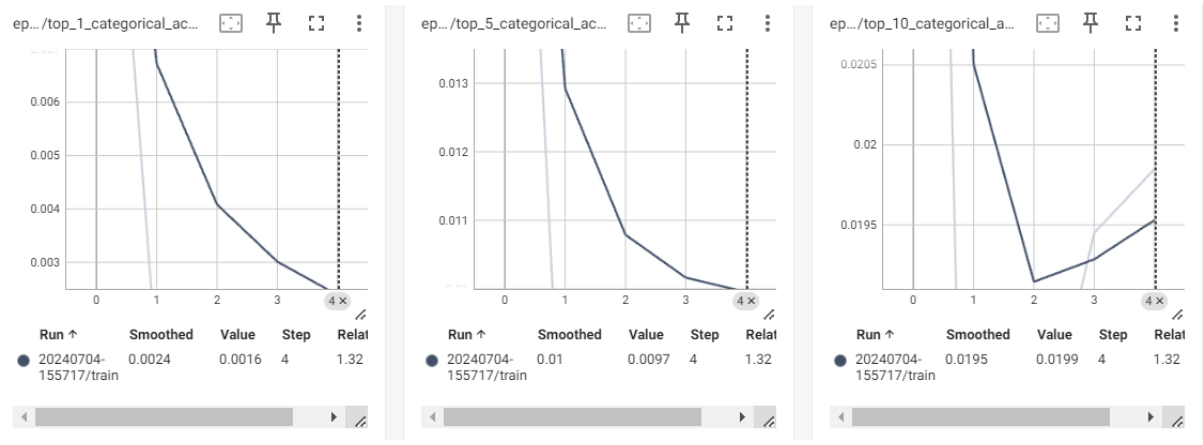
25/25 [=====] - 15s 593ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 4.0000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0023 - factorized\_top\_k/top\_10\_categorical\_...  
25/25 [=====] - 15s 576ms/step - factorized\_top\_k/top\_1\_categorical\_accuracy: 8.5000e-04 - factorized\_top\_k/top\_5\_categorical\_accuracy: 0.0063 - factorized\_top\_k/top\_10\_categorical\_...  
First Model Evaluation: [0.00039999998989515007, 0.0023099999894350767, 0.005140000022947788, 0.028950000181794167, 0.05857999995350838, 12611.50390625, 0, 12611.50390625]  
Second Model Evaluation: [0.0008500000112690032, 0.006279999955905771, 0.013319999910891056, 0.08048000186681747, 0.17067000269889832, 11964.9150390625, 0, 11964.9150390625]

EPOCH FACTORIZED TOP K(5 CARDS) :

[MODEL 1]:

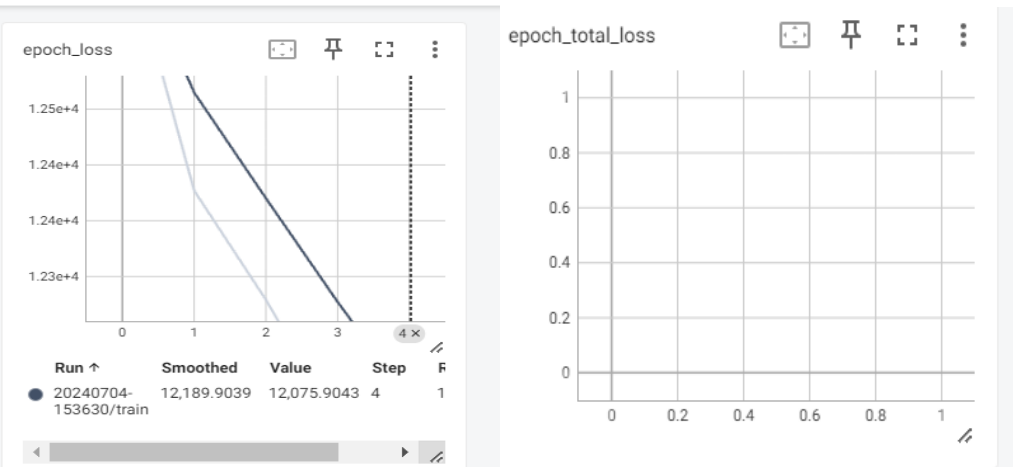


[MODEL 2]:



EPOCH LOSS:

[MODEL 1]



[MODEL 2]

