Self-Attentive Sequential Anime Recommendation

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Self-Attentive Sequential Recommendation

- Try to capture the ‘context’ of user activities based on actions they have performed in the past
- Two current approaches
  - Markov Chains: Predicts a user’s next actions based on last actions
  - RNN: Predict using longer-term semantics
- SASR balances these two approaches
  - Capture long term semantics
  - Use an attention mechanism to predict using relatively few actions
    - Only predict using ‘relevant’ items from a user’s history

Goals

- Our main goal was to build a Self-Attentive Sequential Recommendation system by using self-attention based sequential model (SASrec)
- Learn how Animes are similar to each other
- Apply multihead attention to sequence of animes
- Pass through feedforward network to predict top n animes
- Use various deep learning techniques
    - Dropout
    - Layer normalization
    - Cyclical learning rates

Modelling Techniques

- Hyperparameters
  - Batch_size = 128
  - Dropout_rate = 0.5
  - hidden_units = 50
  - Inference_only = False
  - L2_emb = 0.0
  - Lr = 0.001
  - Maxlen = 50
  - N_users = 100000
  - Num_blocks = 2
  - Num_epochs = 50
  - Num_heads = 1

What didn’t go well

- Data was inconsistent (Missing user_ids and anime_ids)
- Deployment to vast.ai GPU had challenges
    - Hard to figure out how to download data from kaggle onto VM
- Model is overfit, seems to predict most popular animes

Results

Test Hit Rate @ k=10: 0.89252

NDCG @ k=10(Normalized Discounted Cumulative Gain): 0.99495

10 closest animes to Shingeki no Kyojin (Attack on Titan)

- ['Sen to Chihiro no Kamikakushi', 'Soul Eater', 'Shiki', 'Steins;Gate', 'Sword Art Online', 'Shingeki no Kyojin', 'Shigatsu wa Kimi no Uso', 'Shingeki no Kyojin Season 2', 'Shokugeki no Souma', 'Shokugeki no Souma: Ni no Sara']