

Multi-Scale Quasi RNN for Next Item Recommendation

Project No: 3

Github Link: <https://github.com/smritibhati/Next-Item-Recommendation>

Problem definition:

With the growing amount of information on the web and the significant rise in number of users, it becomes increasingly important for companies and organisations to search, map and provide its users with the information that is in accordance to their preferences and tastes.

Recommendation Engines are simple algorithms which aim to provide the most relevant and accurate items to a user by filtering useful stuff from of a huge pool of information base.

Is there a model that utilizes sequential information in the setting of recommender systems ?

Next item recommendation problem is based on utilizing past user-item interaction sequences to make prediction for the most possible item he/she will interact with at next time step.

Main Goal of the Project :

- Given \mathbf{U} , the sets of users, \mathbf{I} , the sets of items, each user is associated with a sequence of items he/she has interacted with in the past, \mathbf{I}^u , propose a sequential recommender that recommends considering the user behaviour as a sequence of ordered items instead of a set of items.
- Combine the powers of convolution and recurrence for Next Item Recommendation task.
- Provide the best of both worlds by exploiting multi-scale convolutional features as the compositional gating functions of a recurrent cell through integration of multi-scale Quasi-RNN module.

Results of the Project: A new neural network architecture called multi-scale Quasi-RNN for next item Recommendation (QR-Rec).

The idea at hand is simple, gating functions are pre-learned via multi-scale convolution and then applied recursively in an auto-regressive fashion similar to a recurrent model to provide improved accuracy and speed as compared to other recommenders.

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