

Xinyu Jiang
03/16/2021
109036441
Paper review for Mar 18

Paper Review

<Summary>

The paper “Deep Learning Based Recommender System: A Survey and New Perspectives” introduces correlation between recommended system models and deep learning. The article reviews more than 100 very new research results and concludes future application direction. Therefore, the rest of the paper will analyze the application of deep learning in the recommendation system.

In the articles, the author divides recommendation system models into three categories: collaborative filtering, content-based recommendation and mixed recommendation. Collaborative filter is an extension of AutoRec, it is a recommendation algorithm based on the historical interaction between user and item, including explicit feedback (user rating record) and implicit feedback (Zhang, 2019). For content-based recommendation, the algorithm mainly analyzes and compares the auxiliary information of user and item. These auxiliary information exist in different forms such as text, image or video (Zhang, 2019). Mixed recommendation is the combination of those two recommendation methods, it integrates two or more recommended strategies to build the recommendation model.

<Strengths and weaknesses>

In the paper, the author emphasizes deep neural networks (DNN) in the recommendation system. Deep neural network is an algorithm that is closely related to specific tasks, domains and recommendation scenarios. Also, the neural network structure is end-to-end differentiable. Compared with a traditional neural network that needs data cleaning and preprocessing (like key phrase extraction, topic modeling etc.), DNN provides a function that could extract all textual

Xinyu Jiang

03/16/2021

109036441

Paper review for Mar 18

information end-to-end. In addition to that, DNN are able to learn hidden cross features/potential features by itself, so that engineers can pay more attention to the data level (Zhang, 2019). However, since DNN does not require data preprocessing, it conducts embedding during the learning period and converts data into high-dimensional vectors. Thus, it sacrifices compiling time and increases the space waste. In addition to that, DNN works well in data that has a great quality and quantity of features, if there are not enough features, DNN could not provide high accuracy.

< Are the evaluations convincing?>

The paper provides an overview of state-of-the-art technology in the recommended field. It effectively captures the content of recommendation systems based on deep learning algorithms in recent years. Also, it provides future trends for recommendation systems to support the point of views. Therefore, the evaluation is convincing.

<Other applications>

The recommendation system could be used in many different areas. It is beneficial not only for customers/users, but also for merchants/companies. It provides opportunities for users finding commodities they may be interested in with less time-spending. In addition to that, in movies and videos, it helps users easily filter out the content of movies they may be interested in. For merchants, the recommendation system provides personalized service, increases product trust and user experience, so that companies could increase its revenue.

Reference

Xinyu Jiang

03/16/2021

109036441

Paper review for Mar 18

1. Zhang, S. , Yao, L. , & Sun, A. . (2019). Deep Learning based Recommender System: A Survey and New Perspectives.. [abs/1707.07435\(1\)](#), 5-.