Chapter 9
Enhanced PMF Model to Predict User Interest for Web API Recommendation

T. Ramathulasi
https://orcid.org/0000-0003-1797-5499
Vellore Institute of Technology, India

M. Rajasekhar Babu
Vellore Institute of Technology, India

ABSTRACT

Many methods focus solely on the relationship between the API and the user and fail to capture their contextual value. Because of this, they could not get better accuracy. The accuracy of the API recommendation can be improved by considering the effect of API contextual information on their latent attribute and the effect of the user time factor on the latent attribute of the user through the deep learning-based matrix factorization method (DL-PMF). In this chapter, a CNN (convolutional neural network) with an attention mechanism for the hidden features of web API elements and an LSTM (long-term and short-term memory) network is introduced to find the hidden features of service users. Finally, the authors combined PMF (probabilistic matrix factorization) to estimate the value of the recommended results. Experimental results obtained by the DL-PMF method show better than the experimental results obtained by the PMF and the ConvMF (convolutional matrix factorization) method in the recommended accuracy.

INTRODUCTION

The Internet of Things (IoT) manages the data supply of devices connected to the internet, controls commands, and manages data collected by the sensor using the communication technology of an innovative computing model found in Web 2.0. IoT is commonly used to improve the computing process and efficiency of sense, as well as video surveillance, intelligent manufacturing, and in many cases manufacturing. In this process, every part of the system is maintained and monitored when large-scale

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equipment is used, through software collection. An effective way to do this is to obtain and obtain public service application programming interfaces (APIs) across a variety of platforms. Without understanding the deployment process, developers can use different APIs to run IoT devices. The workflow approach makes it easy to know how, where, and where the target APIs should be initiated and configured. So industrial systems can be rapidly developed through a powerful tool called API also known as service on the web. But finding suitable APIs has become a big problem due to the tremendous increase in the number of API's Consumers have faced a variety of major difficulties due to the use of big data and the huge explosion of online information entry in this new age. Also, developers are failing to retrieve the required information through communication technology (Ramathulasi & Rajasekhar Babu, 2020) from the big data in the shortest possible time. This method can overcome the problem of data overload, in addition to providing different personalized services to different users. It is highly publicized that this order is recommended by a mature and highly researched cooperative filtering method. It is mainly divided into model-based and neighborhood-based methods (Zhang, Yao, Tay, Sun, & Tay, 2018). Recommended results obtained through model-based methods collaborating with SVD and PMF may yield better results than recommendations obtained through neighborhood-based methods (Koren & Yehuda, 2008). PMFs and SVDs play a key role in establishing the probability factor as well as gradually improving the recommended effect. The PMF not only succeeds in finding the latent characteristics of consumers and s using the rating matrix in terms of user and but also fails to make effective use of the helpful information in the user, information description.

Collecting implicit attributes from the elements and perceiving the exact, real needs of the customers are challenges as per the current objectives. We have integrated the PMF model with Deep Learning for this. The recommendation for text descriptive science was then adapted to this system. The whole process in this process takes place in three stages. The first is to learn the implicit features of the elements, the second is to learn the users' implicit features, and finally, these two are merged into the PMF to train the implicit features as a whole. In this paper, we will add a mechanism that pays special attention to CNN to accurately and better understand the implicit nature of the description of the elements (Seo S, 2017; Chen J, 2017). It pays attention to learning the user's implicit features and filters useless information into the process from the description of the services. In this paper, the user's implicit features are adapted by LSTM to know their exact and true needs (Twardowski & Bartłomiej, 2016; Chen, et al., 2017). In the process of learning this latent feature, the impact of time use on the consumer's tastes, as well as on prehistorical discussions of issues between consumers, is taken into account. Finally, it is possible to estimate the user's preference for the content using both the latent attributes of the user and the elements in conjunction with the PMF. To check the improved efficiency of the DL-PMF algorithm proposed by us in this case for great improvement beyond the recommended accuracy of PMF and ConvMF, experiments were performed on a crawled dataset from programmableweb[1].

BACKGROUND

In this case, many researchers have applied the knowledge gained from their in-depth study to the recommendation system. As a result, a new recommendation system has been developed that addresses the shortcomings of the traditional recommendation method and makes effective use of support information, but some shortcomings have been observed. Two parallel CNNs (convolutional neural networks) were created using factorization machines to extract latent features from the underlying elements and