A Prediction Method of Consumer Buying Behavior Based on Attention Mechanism and CNN-BiLSTM

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二.成果简介：

We propose a prediction method of consumer buying behavior, which combines attention mechanism and CNN-BiLSTM. By integrating feature selection with model selection, this method fully extracts important local features and behavior sequence features with combined advantages of the two models and uses an attention mechanism for optimization. The experiment results demonstrate that the proposed prediction method has advantages in not only accuracy but stability over other models.

三. 主要研究内容及创新点：

A prediction method of consumer buying behavior based on attention mechanism and CNN-BiLSTM is proposed, to fully extract the effective features of the behavior and make its prediction more accurate and stable. The CNN model is used to automatically extract local features of the consumer buying behavior to select and optimize important information. The BiLSTM model is used to collect sequence patterns of buying behavior to find the correlation among features. The attention mechanism is used to assign different weights to the state values of the hidden layers of each neural network so that the hidden layers can better express important information to obtain more accurate and stable predictions. The model structure is shown in Figure 1. To verify the effectiveness of the model, we compare the proposed model with the traditional machine learning models SVM, XGBoost and Random Forest (RF), as well as the deep learning models CNN, LSTM and CNN-LSTM. The research results show that the prediction method proposed in this paper can fully extract the effective characteristics of users' purchase behavior, has higher prediction accuracy than the benchmark model, and the model stability is better than the benchmark model.

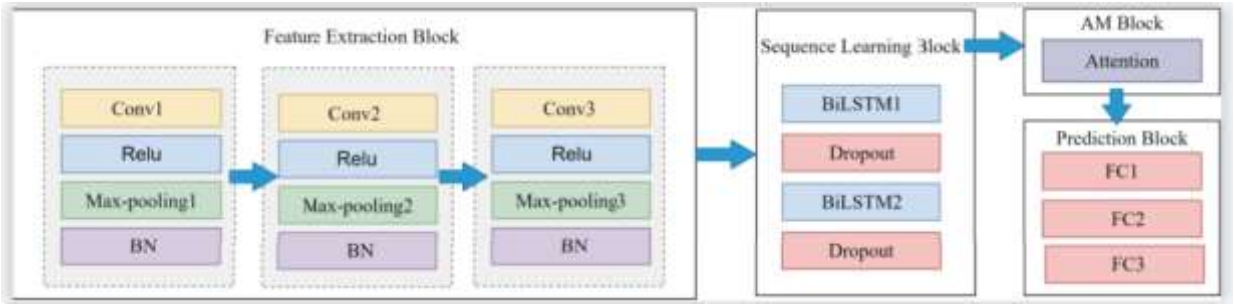


Figure 1 Block diagram of prediction model based on attention mechanism and CNN-BiLSTM.

四. 主要研究成果及应用情况

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