NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Sequential Recommendation
## for Canteen Food Recommendations in NTU

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1. MOTIVATION

Recently, food recommendation has become more significant due to its potential to serve tremendous service demand and allow users to discover their preferred food items from a variety of choices. Nevertheless, to build an effective food recommender system, understanding the user's dynamic food preference is a prerequisite. In this project, our aim is to apply sequential recommendation (SR) to model such evolving preference in user behaviours. We attempted to evaluate multiple attention-based SR models and apply transfer learning techniques to further improve the models' performance.

2. ATTENTION-BASED SEQUENTIAL RECOMMENDATION
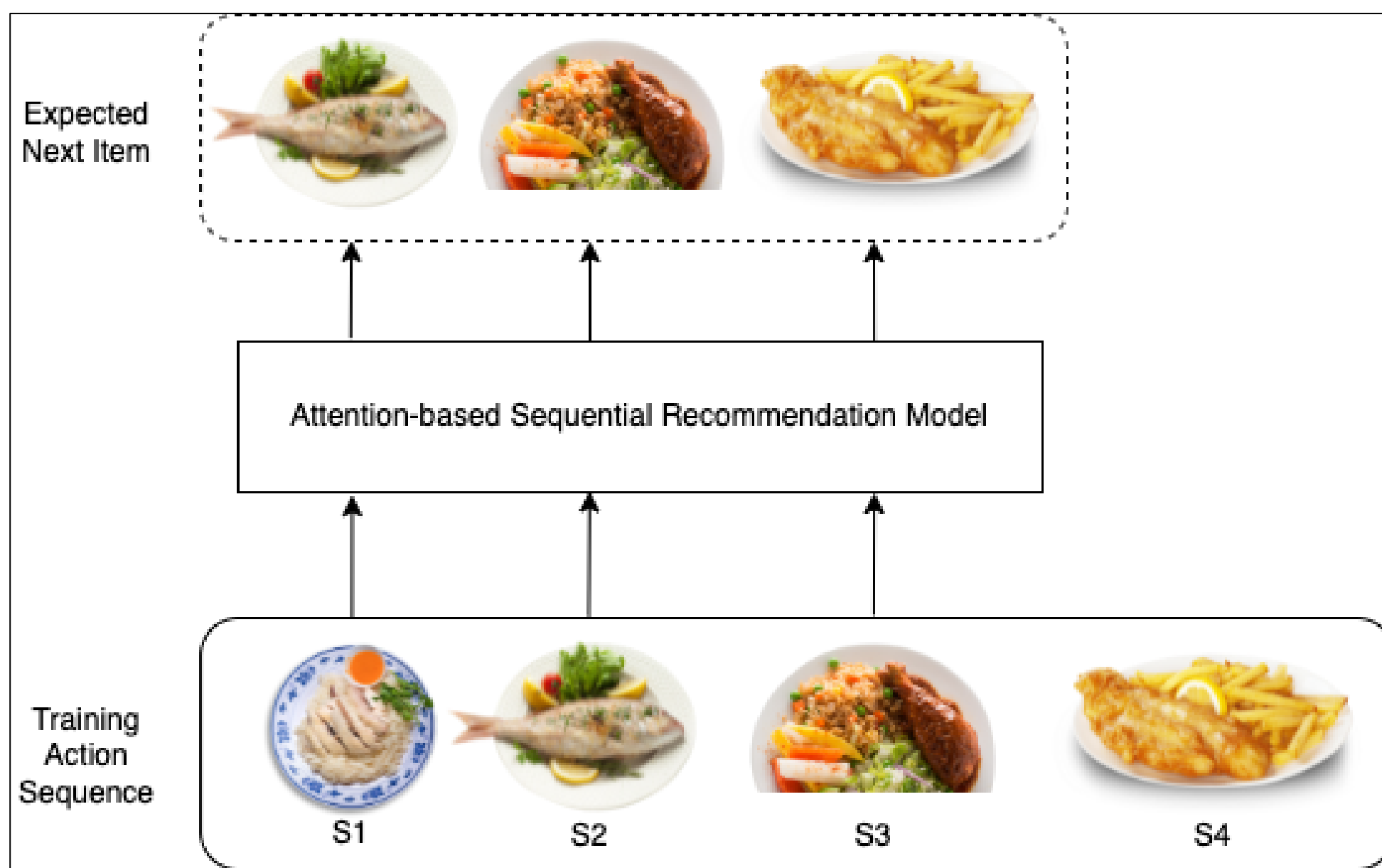
A canteen food review dataset is introduced comprising food stall reviews crawled from the NTU Food Hunter system. Four attention-based SR models, consisting of SASRec, TiSASRec, BERT4Rec, and STOSA models are evaluated on the Food Hunter dataset and other benchmark datasets. The objective of the SR model is to predict the next item based on the user's past behaviour sequence. In addition, we compare Collaborative Filtering (CF) versus attention-based SR methods on a benchmark dataset and find that SR methods outperform CF methods in predicting the user's following item.

3. TRANSFER LEARNING

Because the Food Hunter dataset is relatively small, we use transfer learning techniques by pre-training the SR models on a larger food domain dataset named Amazon Food. The results show that transfer learning can significantly improve some models' performance on the Food Hunter dataset.