Performance Prediction for
Learning to Rank Systems

Aaron Goh
University of Utah

UUCS-21-007

Abstract

Learning to Rank has been an intensively studied topic within the Information Retrieval community. Among its top applications is with enabling Search Engines to identify relevant documents from a query input. With Search Engines being the primary engine behind on-demand access to information, it is important for Learning to Rank algorithms to return trustworthy documents to users as poor results have the potential to greatly misinform individuals. In this thesis, we propose utilizing machine learning models to predict the performance of popular existing learning to rank algorithms Ranking SVM, LambdaMart, and RankNet. This model helps existing web search engines augment successful evaluation of rank lists. Expressing the viability of this solution, empirical results for Feedforward, LSTM, GRU, Transformer, and other model variants have been collected and evaluated based on the C14-Yahoo! Learning to Rank Challenge Data Set.