THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART

Abstract

Department of Electrical Engineering

Master of Engineering

Collaborative Filtering Using a Variational Autoencoder: Exploring a Cyclical Annealing Schedule and Auxiliary Information Embedding Layer

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In this paper we use a variational autoencoder to make a collaborative filtering recommendation engine. We train and test our models on a dataset of user ratings for movies. Movie preferences are highly subjective, making it a good domain for studying personalization technologies. We expand on the previous literature by using a novel annealing schedule for a regularization hyper-parameter. We also incorporate auxiliary information on the items through the use of an embedding layer. The latent item embeddings are generated in a novel way leading to better embeddings and models compared to the previous method.