Recommendation Systems Approaches on the Netflix Prize Data Set

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Abstract—**Recommendation systems play an increasingly vital role in the ability to make informed decisions in modern societies, given the ever growing deluge of data which might inform those decisions. Without the ability to quickly choose from among a few well selected options ordinary activities from applying to jobs to searching the internet, buying household goods, or reading the latest news might become difficult, deceptive, or even dangerous. Given the relatively many recent major advances in machine learning techniques, especially in relation to deep learning, it is important to understand how recommendation systems have changed and improved.**

1. Introduction

2. Background

3. Related

4. Approach

Our approach to investigating the architecture for deep learning recommendation systems, was to first decide on a baseline with which we could compare the effectiveness of our techniques. After finding a benchmark we reviewed the literature we had assembled to decide which design was most applicable to our dataset, and our ability to implement.

We knew from the Netflix competition that the winners had an RMSE of 0.8567. We also wanted a way to compare our engineered solution, to one that simple took all the data Netflix provided and used it as inputs on a naive feed-forward neural net.

The theme of all the papers we read covering the various methodologies for applying deep learning to recommendation systems, was creating more meaningful representations of the users, the items they interacted with, and context around the item. Many of the models we read about involved many complex hierarchical layers. While many of these exotic arrangements made sense, we were not sure we had the technical expertise to implement them in the allotted time. We settled on a technique called Neural Collaborative Filtering [1]

5. Setup

6. Experiments

7. Conclusions

References

[1] X. He, L. Liao, H. Zhang, L. Nie, X. Hu, and T.-S. Chua, "Neural Collaborative Filtering," 2017. [Online]. Available: http://arxiv.org/abs/1708.05031