

Thesis Project Portfolio

Analysis of PITF and BPR-OPT

(Technical Report)

The Bias of Recommender Systems and Impact on Social Culture

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

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Sociotechnical Synthesis

The growing works in the field of information retrieval and the amount of data available on the internet furthers the need to satisfy the large user base with relevant results. Recommender systems provide a way to rank the most relevant results, making the decision process of online interactions much simpler. The analysis of current and past state-of-the-art recommender systems in my technical research will serve to create progress in identifying stronger baselines to achieve better prediction quality. By looking at a previous implementation, we make observations as to how progress in recommender systems is measured. The STS portion discusses the biases in a system that has billions of users each day. Progress is being made quickly in the field of recommender systems, therefore there is a need to eliminate possible biases within these systems in order to keep pace with the progress in recommender systems to find the balance between social culture and technical progress. There ultimately exists a need for stronger baselines and industry standards that move just as quickly as research in this field so that the sociotechnical progress made in recommender systems can grow.

Changes made to recommender systems effect billions of users world-wide. By studying the biases within the process of personalizing data for each user, whether it is intentional or unintentional bias, there should be an overall awareness for why results are shown in the order they are shown. With such a large user-base, this type of problem should be tackled using an approach that effects each actor in a network of internet users, recommender systems, and corporations. There are currently no industry standards in this field, therefore we must study the sociotechnical effect in order to create these industry standards. The STS research is very closely tied to the technical research of recommender systems. By observing the sociotechnical overlap,

I utilize my research in computer science and ethical engineering to improve on the benchmarks for progress in the new age of the internet and information retrieval.