

Intro

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Recommender systems play a critical role in personalizing user experiences across various domains, such as e-commerce, entertainment, and social media. These systems aim to predict the most relevant items for users by analyzing historical interactions and preferences. As the volume of data grows exponentially, the need for efficient and scalable approaches to build and deploy recommender systems becomes increasingly important.

This project explores the application of Massively Parallel Data Science (MPDS) technologies to the development of recommender systems. Specifically, we focus on two widely-used approaches: matrix factorization and neural networks. The scientific question we aim to explore is: How do matrix factorization and neural network-based recommender systems compare in terms of computational efficiency and predictive performance when scaled to large datasets using parallel computing technologies?

To assess the effectiveness of the proposed models, we will compare them to a baseline approach where recommendations are made based on the most popular items across all users. This baseline model serves as a simple yet effective starting point, as it assumes that the most frequently interacted items will be of interest to all users. By comparing the matrix factorization and neural network models to this baseline, we aim to evaluate whether these more sophisticated techniques offer substantial improvements in terms of recommendation accuracy and computational scalability.

The challenge in this project lies not only in building these models but also in evaluating their computational performance at scale. Our goal is to investigate how these methods perform when applied to large datasets and to assess the impact of scaling on computational efficiency and accuracy.

Through this project, we aim to demonstrate how modern recommender systems can be built and scaled to handle massive data volumes while delivering personalized recommendations in real-world environments. The comparison of matrix factorization and neural networks to the baseline model will provide valuable insights into their strengths and weaknesses, with a focus on their suitability for parallel computation in large-scale settings.