Project: Nonnegative Matrix Factorization for Recommendation System

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Matrix methods lie at the root of most methods of machine learning and data analysis. Among all matrix methods, nonnegative matrix factorization (NMF) is an important one. It automatically extracts sparse and meaningful features from a set of nonnegative data vectors and has become a widely used tool for data analysis. As we know that nowadays people are heavily relying on the internet, like online shopping. Given a product, the recommendation system behind the online shop would predict the customer's preference, and make recommendations based on the customer's attributes and shopping habits, as well as the choices of similar customers. In this project, we will explore nonnegative matrix factorizations (NMF) in the applications for recommendation system. We will explore the NMF models based on the recommendation tasks and the structure of the data. The algorithms will be developed accordingly.

Prerequisites: Linear Algebra/Numerical Linear Algebra, Numerical Algorithm, MATLAB.