

# Capstone 2 Project Proposal

The aim of this project is to create *recommender systems*, show some specific examples of them, and to demonstrate simple implementations of them in Python/NumPy/Pandas/ Surprise.

A recommendation engine filters the data using different algorithms and recommends the most relevant items to users. This notebook focuses on movie recommendations from explicit ratings by the users.

The goal is to make predictions based on this data, such as:

- How a given user will most likely rate a specific product they have not purchased or reviewed before?
- What “new” products a system might recommend to them?

There are a wide variety of applications for recommendation systems. It has been increasingly popular over the last few years and are now utilized in most online platforms that we use. The content of such platforms varies from movies, music, and videos, to friends and stories on social media platforms, to products on e-commerce websites, to people on professional and dating websites, to search results returned on Google. The recommendation engine that we are about to create would help the customers in deciding what would interest them and the e-commerce business to promote more products that the customer would be interested in buying.

Data were acquired from <http://jmcauley.ucsd.edu/data/amazon/>. This dataset describes a subset of the data in which all users and items have at least 5 reviews. It contains 371,345 ratings, from 324,038 customers. Dates of reviews were from 2000 to 2018.

Two main approaches are widely used for recommender systems. One is content-based filtering, where we try to profile the users’ interests using information collected, and recommend items based on that profile. The other is collaborative filtering, where we try to group similar users together and use information about the group to make recommendations to the user. This project will present different types of collaborative filtering using the Surprise package from Sci-kit, a machine learning library in Python.

The deliverance of the code of this project will be through Google Colaboratory. Google slides on a summary and explanation of the approaches that were done in the project will be provided. The final report will be submitted as well. After approval from the mentor, I will create repositories in each document and will be uploaded in Github.