Project Proposal
CS387

Recommender System using Graph DBs

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What are Recommender Systems:

Recommender systems are the systems that are designed to recommend things to users based on several factors. These systems predict the most likely product that the users will purchase based on the history of interactions and purchases done by the user. Companies like Netflix, Amazon, etc. use recommender systems to help their users to identify the correct product or movies for them.

Deliverables:

We are planning to implement recommender systems for two applications - Movie recommendations and e-Commerce recommendations, which will broadly cover the following.

1. Create a recommender system for TV shows and movies/e-Commerce, similar to Netflix and Amazon Prime
2. Add user data into the database and update the recommendation model incrementally instead of retraining on the entire data
3. Create a web application for client side interface with user authentication
4. There are 3 types of recommendations that we will provide:
    a. General recommendations of all products that a user sees on logging into the account based on all the products that a user has shown interest in; for example - laptop, utensils, books, shoes, etc
    b. Recommendations provided based on the specific movie / TV show / product that a user views; for example - once a user has selected a monitor, we will show that users who bought a monitor also bought mouse, keyboard, HDMI cable, etc
    c. Trending shows / products - based on ratings and recommendations
5. Give a demonstration on the dynamic updation of the recommender system based on new data
6. We will NOT make functionalities for adding items to cart and payments as our focus is on making the recommender system

Methods:

1. Collaborative Filtering : Recommendations based on products liked by user in the past
2. Content-based Filtering : Recommendations based on most popular contents
3. Hybrid Filtering : mix of collaborative and content based filtering

We plan to use the neo4j graph database API (available in python) for our project as it is helpful in modelling relationships of graphs. We will use the Netflix Prize Dataset and Amazon Product Reviews as the starting point for data

References:

- https://cseweb.ucsd.edu/~jmcauley/datasets.html
- https://en.wikipedia.org/wiki/Recommender_system
- https://neo4j.com/docs/api/python-driver/current/api.html