RECOMMENDATION SYSTEM

Abstract:

Today, recommendation technology has changed itself into a unique tech in the modern and exciting world of e-commerce apps by assisting users in selecting things or products of interest from a huge pool of options.

Statistical Analysis/Methods: With the many views of the recommendation field in mind, the complete evaluation process was separated into several research topics. The review process provides a thorough discussion on different techniques deployed in recommendation system such as collaborative filtering, content-based filtering, social filtering, demographic and knowledge-based and utility based systems.

The different application domains where recommender systems are being adopted these days include movie, music, books, news, tourism etc.

Introduction:

The goal of this project is to study recommendation engines and identify the shortcomings of traditional recommendation engines and to develop a web based recommendation engine by making use of user based collaborative filtering (CF) engine and combining context based   
results along with it.

The system makes use of numerical ratings of similar items between the active user and other users of the system to assess the similarity between users’ profiles to predict recommendations of unseen items to active user. The system makes use of Pearson's correlation to evaluate the similarity between users. The results show that the system assumes that active users will always react constructively to items rated highly by similar users, shortage of ratings of some items, adapt quickly to change of user's interest, and identification of potential features of an item which could be of interest to the user.

Problem Statement

*Designing recommendation engine based on users interests using different modelling techniques.*

*The aim is to classify patterns and to relate them to user rating patterns which are recorded in a dataset*

Proposed Solution

In order to achieve the goal of the project first we will implement the following:

* Collaborative Filtering using KNN (k – Nearest Neighbor)

k-NN is a machine learning algorithm which we will use to find clusters of similar users based on common ratings

* Cosine Similarity

A picture containing text, antenna

Description automatically generated

To measure the similarity between the two vectors of different users of the product space. It is measured by the cosine of angle between the two vectors to determine whether the vectors are pointing towards the same direction or not this would be used as a metric for the k-NN algorithm to calculate the similarity between rating vectors

* Pearson’s Correlation

We use Pearson’s correlation coefficient to measure the linear correlation between 2 variables The proposed system makes use of Pearson’s correlation to implement User based collaborative filtering, and context, Synonym 14 Finder to implement Context based filtering techniques to generate recommendations for the active user.

Pearson’s Correlation: is a way to find out similar users. The correlation is a way to represent data sets on graph. Pearson’s correlation is x-y axis graph where we have a straight line known as the best fit as it comes as close to all the items on the chart as possible. If two users rated the books identically then this would result as a straight line (diagonal) and would pass through every books rated by the users. The resultant score is this case is 1. The more the users disagree from each other the lower their similarity score would be from 1.

The information provided by user is send to the server which is composed of collaborative filtering engine , k-NN Machine Learning model and REST server. The server then sends user request to both the above mentioned engines and then delivers the output to the user.

Drafted by : **TEAM PERL**

Kushagra Sahu ,

Simran Patil,

Mohammad Anas,

Prajwal Rajput,

Shubham Soni,

Tanay Gaur.