Welcome to the USU AI club! Please scan the QR code for attendance.

Code Generation/Movie Recommendation Workshop

Last meeting recap

- **Dr. Luke Hutchinson, the future of AI and Business.**
- Link available under MyUSU Resources, or scan this QR Code

- Happy 1st birthday ChatGPT!

- Stability AI's SDXL Turbo Released (Fastest generating image model)

- AI Pin Unveiled (runs on chat gpt)
- Runway Movie Competition
- Pika video generation released

Drama Slide

https://www.youtube.com/watch?v=64f8YoqPSgY

Job Openings

https://www.linkedin.com/jobs/view/3774999791

Introduction & QR Code

Workshop Goals

Purpose of the Workshop:

- To provide a comprehensive understanding of recommendation systems in the context of Netflix.
- To showcase the practical application and integration of AI in enhancing user experience through personalized content.
- Use AI to develop code in a practical application

Workshop Structure:

1. Introduction to Recommendation Systems: Explanation of content-based filtering & collaborative filtering: How both work and their relevance. The role of AI in refining recommendation algorithms.
2. Interactive Demonstration: Live coding session to demonstrate the setup of a basic recommendation system. Step-by-step walkthrough of the code and algorithms. Opportunity for hands-on practice and Q&A throughout the session.
3. Real-world Applications: Discussion on the impact of recommendation systems in various industries. Exploration of how these systems shape user experience and decision-making.
4. Q&A and Discussion
5. Additional Information: Details about the club, upcoming events, and membership.

Netflix Recommendation System

How it Works?

1. Collaborative Based Filtering:
   - Predict user interest based off the interest of other users who share similar taste

2. Content Based Filtering:
   - Extracting data/traits from content that users enjoy to suggest new content with similar attributes

3 Legged Stool Analogy:
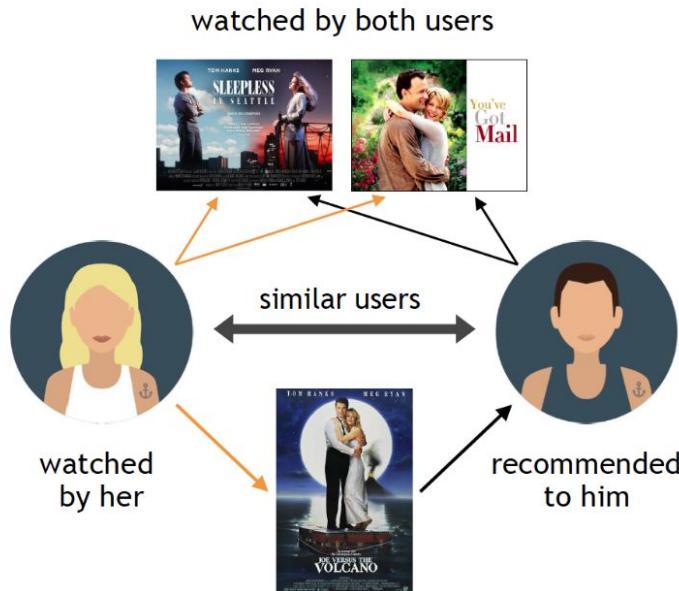
1. First Leg: User Interaction

2. Second Leg: Taggers

3. Third Leg: Machine Learning Algorithms

Final Notes:
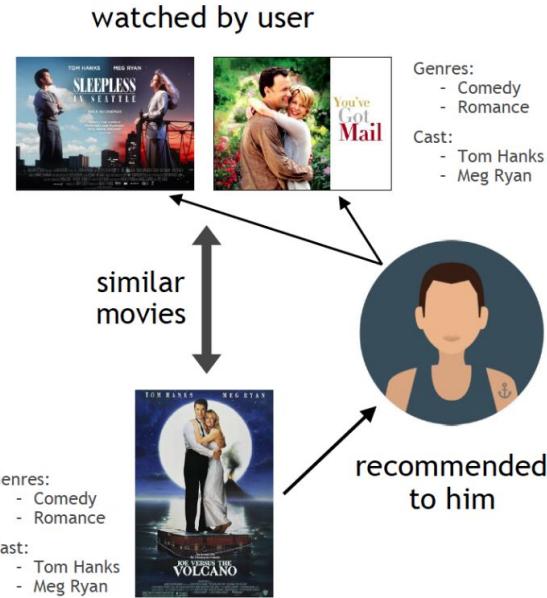
Taste Communities: Collectively these legs create "taste communities", which group people of similar interest and preference together.

Visualisation

Collaborative Filtering

watched by both users

similar users

watched by her

recommended to him

Content-based Filtering

watched by user

Genres:
- Comedy
- Romance

Cast:
- Tom Hanks
- Meg Ryan

similar movies

Genres:
- Comedy
- Romance

Cast:
- Tom Hanks
- Meg Ryan

recommended to him

A.I & its Involvement
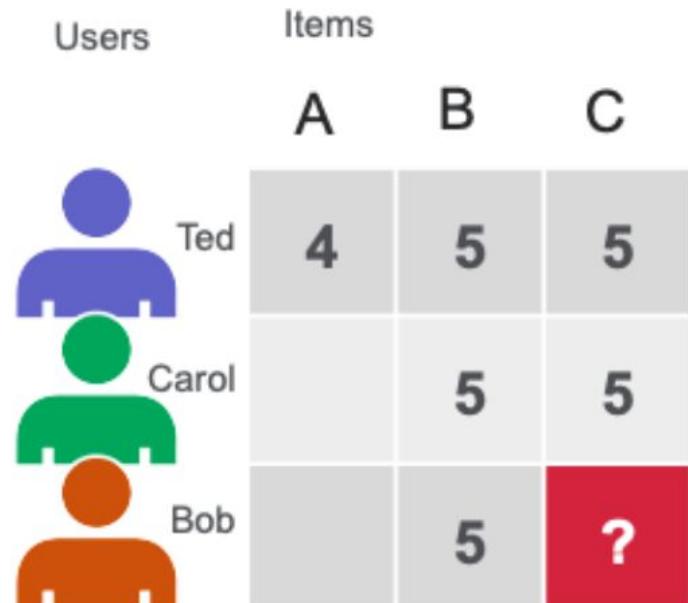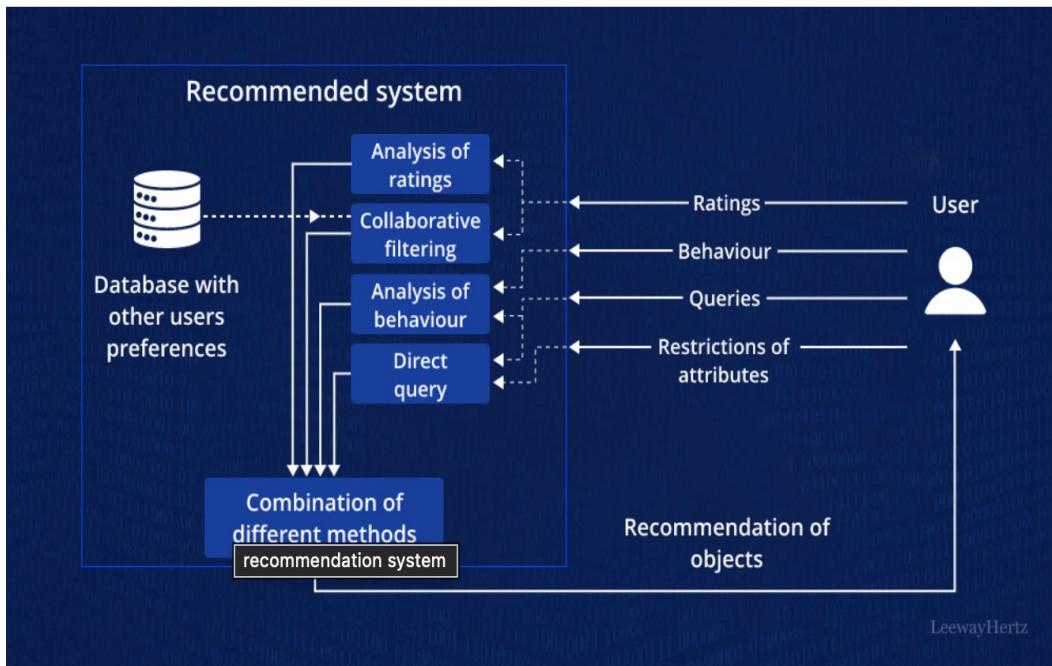
Machine Learning Algorithm:

- Analyze tons of information about what movies you've watched and enjoyed, then use patterns in that data to suggest new movies you're likely to enjoy.
- Use mathematics, like statistics and probability, to identify patterns in your movie-watching habits and predict which other movies you might like.

Benefits:

- Recommendations account for 80% of hours streamed on Netflix
- Small amounts of improvements can yield billions of dollars of sales
- Improves retention: Customers enjoy being understood by a brand and are more likely to stay loyal
- Creates seamless customer experience

Visuals

Development Aspect

Identifying a Good Recommendation System:

Challenges:
- Accuracy
- Coverage

Steps to Developing Own System

1. Data Collection
2. Storing Data
3. Analyzing Data
4. Filtering the Data

LLMs vs Our Project

- Large language models use neural networks to generate probable outputs, essentially changing qualitative data like sentences and words into quantitative data (numbers) and then calculating a readable response
- Our program will perform in a similar way, only on a much smaller scale and using simpler logic - LLM's help build massive datasets much like ours (with substantially more data and correlational values)

Intro to Coding

- If you have questions, ask them at any time!
- We're using two approaches for different ways to code it, one more complex than the other
- The basic code is going to be pretty simple, taking a user genre input and outputting movies that have already been matched and compiled with their appropriate genres

Get your CSV!

Email me if you think you'll at all be interested in using the dataset for this workshop - You can use Google Colab to run code (Python or R will be best for this activity), and the dataset is only 11 kb.

I'll send out the dataset asap to all who email me

sethstock_94@hotmail.com

Purpose of Code

- We have a dataset containing five columns with roughly 98 rows. There is a list of movies, and three genres in the adjacent columns that correspond with each movie. There is also a column that lists every genre that was used in the dataset
- We want to generate the python code that will load the data, display the available genres, take a user genre input (1-3 genres per query), and output movies that correspond with the genres inputted.

How to Solve this?

- Like many problems, there are many solutions that will help us achieve the similar results
- If you want you can come up with your own solution, but we have two examples with different methods to guide you if you want help

Solution 1 (GPT 3.5)

- User will input between 1 and 3 movie genres that they like
- Program will parse through database and return all movies that have all of these genres in their genre list

Solution 2

- User will input between 1 and 3 movie genres
- Program will calculate which movies fit the user's request best
- Assume the columns in the database correlate to most relevant genre (genre 1 is most relevant, genre 2 is second most etc.)
- Parse through database and calculate "score" for each movie, where movies with more relevant genres (out of the inputs) will have a higher probability of returning
- Example
  - The Godfather, Crime, Drama, Thriller
  - Assign value to each genre (crime = 3, drama = 2, thriller = 1)
  - If user wants Drama and Thriller movies, score for godfather would be 3
  - Out of all movies with score above 0, the score will correlate to a probability of response
  - If there are 4 movies with scores 6, 3, 3, 1 the probability of response for each respective movie will be 47%, 23%, 23%, 7%

How did I generate this? (Solution 1)

All using ChatGPT! I didn't modify a Single Line of code. It can be done on the free version, you just have to be descriptive. Here are some screenshots of my prompts to help walk you through the process:

You

Say there are four columns in a CSV dataset. One column is labeled Movie and contains a list of 100 movies. There are three columns next to it, labeled Genre 1, Genre 2, and Genre 3. For each row of Movie, there are 3 genres that correspond to that movie. Generate the python code for use in python online that would let me input 1-3 genres and that outputs every movie that has the inputted values in the 3 genre rows

Example of Chat GPT Usage and Troubleshooting (3.5)

SE **You**

I am using google colab for python, change the code for the task so that it'll import the csv into colab and perform the task I asked

SE **You**

"df = pd.read_csv(io.BytesIO(uploaded['your_dataset.csv']))" This part of the code is not working correctly, I am inputting the name of my dataset but it will not recognize it

SE **You**

I need the code to output the movies that correspond with all of the inputted genres. If I input 3 genres, only output movies that have all 3 genres in the adjacent columns.

Further Troubleshooting (3.5)

SE   **You**

Modify the code, there is a column labeled "genre list", with every genre that was used in the data in the rows below, that I want to display for the user before they input their search genres

SE   **You**

Sorry If I was unclear, disregard the error message. I need you to modify the code, as I may not have described it well enough. The column labeled genre list contains every genre that was used in the data, separated by rows.

Implementation in Our Daily Lives

Importance of these Systems:

Recommendation systems like the one used by Netflix are widespread in our daily lives, fundamentally changing the way we interact with content, products, and services. They're powered by complex algorithms based on artificial intelligence and machine learning, and are employed in many aspects of our day to day lives.

Use Cases:

1. Online Shopping
2. Social Media
3. Music Streaming

In Closing…

- This is our last workshop/meeting of the semester but we've got some big stuff in the works for next, keep in the loop! Thank you all so much for coming and making this club what it is!
- Q&A

Thank you for coming!
Our Social Media

@USUAICLUB

Sources

1. How to Build a Recommendation System?
   https://www.leewayhertz.com/build-recommendation-system/

2. Netflix Movie Recommendation System:
   https://towardsdatascience.com/deep-dive-into-netflixs-recommender-system-341806ae3b48

3. More Netflix Recommendation System:
   https://www.wired.co.uk/article/how-do-netflixs-algorithms-work-machine-learning-helps-to-predict-what-viewers-will-like

4. What is a Recommendation System?
   https://www.nvidia.com/en-us/glossary/data-science/recommendation-system/#:~:text=A%20recommendation%20system%20is%20an,recommend%20additional%20products%20to%20consumers.