Online course recommendation engine

Rahul Sircar

Abstract:

In this report I have proposed the idea of using deep learning methods for builiding a recommendation engine for recommending online courses that will suit the learner's learning patterns and learning style.

There are so many online courses out there available on the internet but people are usually not aware of that fact that which course will actually suit them which will help them learn the subject properly in the way they want to learn the subject.

Problem statement:

The problem statement is building a recommendation engine for recommending online courses in a personalised manner so that learners can absorb the knowledge in the way they feel comfortable and in a manner that is best for them.

There are already online course recommendationengines available in sites like udemy,skillshare etc. But it does not always suits the interests,learning styles and learning patterns of the learner.

Business need Assessment:

People have always needed a recommender system even before the time before PC software entered the markets.They have always been quite valuable when it came to recommending movies,products and clothes for consumers to buy,courses and so much more.By the advent of software programming,machine learning and deep learning algorithms,recommender systems have become so advanced because of programming,ML and deep learning algorithms used in them.Still sometimes one method of recommder system might not be personalised enough for the users.Therefore by using three different methods namely content based filtering,collaborative filtering and a hybrid method(combining content based filtering and collaborative learning).

Target Specification:

The proposed system/service will provide online course vendors/companies with some techniques so that their courses' views and participation both increase. It will suggest them courses based on either the genre of content the target user prefers(content based filtering) or based on a group of people's interests and tastes which are similar to the target user's tastes(collaborative filtering).We can also use a hybrid method comprising of both content based and collaborative filtering techniques to build a better recommender system and provide better user experience to the users surfing the platform.

Note:
Collaborative filtering can be of two types:
i) User-based collaborative filtering– The recommender system tries to find out similar users to the target user by calculating certain similarity measures(method of cosine similiarity here is quite popular for this type of recommender system) and then suggest items to the target user based on similar user preferences. Similarity calculation is an important task here.

ii.) Item-based collaborative filtering– The recommender system tries to find out items based on previous user preferences of the user and then recommend similar items to the user. These items might be of interest to the user.

Applicable Patents:

● Patent 1: Course recommendation system and method

A system for assisting a student or other user to identify courses that best fit the student's or user's talents and program of study. Ratings can be shown as a number of stars, a number, a letter, or similar indicator. The system combines three criteria to produce each list of courses that it recommends: courses that apply directly to the student's program of study, courses that are the most central to the university curriculum (centrality ranking), and courses that the model predicts the student will achieve the best grades in (grade prediction). The recommended course list may be displayed in a web-based interface that allows each student to find information on his/her recommended course curricula and requirements, as well as class availability in upcoming semesters. Majors or concentrations can also be evaluated and recommended.

● Patent 2: Topic Based Recommender System & Method

A recommendation system is used to provide suggestions in environments such as message boards, RSS aggregators, blogs and the like by comparing member interests and creating recommendation items corresponding to categorized topics or other members. In some instances, a natural language can assist in processing content to sort it into the appropriate topic bin. An advertising module cooperates with the system to provide content based ads relevant to the recommended items.

Applicable Constraints:

- Data Collection from paid online courses
- Continuous data collection and maintenance
- Taking care of rarely viewed and bought online courses
- Convincing the institutes and online course organisers to implement the system in their shop

Applicable Regulations:

- Data protection and privacy regulations
- Govt Regulations for small edtech businesses

Business Opportunity:

Since the above techniques have only been used by large companies like netflix,udemy etc, this can be extended for small businesses/new edtech startups too.More modern methods of RNN and deep learning are being researched and tested for applying them in the recommender systems markets.

Conclusion:

More and more organizations are discovering ways of using recommender systems to learn more about their users,their likes,what content they like to view/study and henceforth provide a better user experience. As deep learning methods are on the rise and variations of exisitng collaborative,content and hybrid recommender systems are also being researched and tested in real platforms.These will help in improving their views,satisfy their customers and hence increase their business.

References:

The sources I have used as reference for analyzing the need of such a system for local businesses and big businesses which used the following techniques and strategies to recommend online courses and increase their content viewership/participation and hence their business are mentioned below:

- https://www.researchgate.net/publication/315848045_A_Recommendation_System_for_Online_Courses
- https://www.researchgate.net/publication/263377228_Hybrid_Recommender_Systems_Survey_and_Experiments
- https://www.analyticsvidhya.com/blog/2021/08/developing-a-course-recommender-system-using-python/
- https://www.researchgate.net/publication/220604600_Recommender_Systems_An_Overview
- https://www.researchgate.net/publication/287952023_Collaborative_Filtering_Recommender_Systems
- https://www.researchgate.net/publication/280113634_Content-Based_Recommendation_Systems
- https://towardsdatascience.com/using-cosine-similarity-to-build-a-movie-recommendation-system-ae7f20842599