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Recommender Systems

Hi guys, welcome to the recommender systems lecture!

In this lecture, we will talk about “Recommender Systems”. We will discuss their different types and approaches to create such systems using Python.

✅ *Optional Readings and References:*
There are several books and lots of material available on Recommender Systems on web for free. If you are interested to learn more, the books below are a good read. They are available for free on the provided links. Recommender Systems Handbook - Springer and Recommender Systems by Dietmar and Markus

Another open access article
The Netflix Recommender System: Algorithms, Business Value, and Innovation

Dr. Junaid S. Qazi PhD

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Recommender Systems

As an Internet user, you may have come across a recommender system in one way or another.

- A very common example, while searching a book on **amazon.com**, you may get a suggestion saying *"Customers Who Bought This Item Also Bought,"*. The software system that determines which books should be shown to a particular visitor is a *recommender system*.
- Another very common example is from Netflix, the online movie rental service, which suggest a movie to its users. The ***Netflix awarded a million dollar prize*** to the team that first succeeded in improving substantially the performance of its recommender system.

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Recommender systems play an important role in such highly rated Internet sites as Amazon.com, YouTube, Netflix, Yahoo, Tripadvisor, Last.fm, and IMDb. They have proven to be valuable means for online users to cope with the information overload and have become one of the most powerful and popular tools in electronic commerce.

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Correspondingly, various techniques for recommendation generation have been proposed during the last decade, many of them have also been successfully deployed in commercial environments.

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Recommender Systems

Generally, the recommender systems are of six classes:

- **Content-based:** These system learns to recommend items that are similar to the ones that the user liked in the past.
- **Collaborative Filtering:** The simplest and original implementation of this approach recommends to the active user the items that other users with similar tastes liked in the past. *"Wisdom of the crowd" to recommend item!*
- **Demographic:** This type of system recommends items based on the demographic profile of the user.
- **Knowledge-based:** Knowledge-based systems recommend items based on specific domain knowledge about how certain item features meet users needs and preferences and, ultimately, how the item is useful for the user.
- **Community-based:** This type of system recommends items based on the preferences of the users friends. This technique follows the epigram *"Tell me who your friends are, and I will tell you who you are".*
- **Hybrid:** This type of system are based on the combination of the above mentioned techniques.

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Let’s get into the the real hands-on work now and create a content-based Recommender System for the very famous dataset of movies.
This dataset is often the first dataset for those who wants to learn Recommender Systems.
Although, the dataset is much larger than those we have used in this course so far.
However, in the real life, Recommender Systems deal with much much larger datasets!
So, ready to move one? Excellent!

✅ Please note, Recommender Systems (RS) is an addition and option topic in the course. The purpose and main idea of adding RSs in to this course is to make you familiar with the variety of career paths you can build on the knowledge you have acquired from this course.
If you really want to be expert in the filed of Recommender Systems, you must have a very good and deep understanding of the linear algebra. Start with the recommended reading