**Recommendation Engine**

Recommendation engines are tools that leverage predictive analytics to help companies anticipate their customers’ wants and needs. The engines use machine learning and statistical modeling to create advanced algorithms based on a business’s unique historical and behavioral data. The resulting recommendations are based on some combination of:

* A customer’s past behaviors and history
* A product’s ranking by consumers
* The behaviors and history of a similar cohort

**Types of recommendation engines and how they work :-**

* **Content-based filtering**

This type of filtering is used in “Similar items include…” recommenders. Content-based filtering creates predictions on the actual qualities of the products and services being offered. Products in this system are assigned attributes that can be compared to other products directly. Companies choose the types of attributes used by the engine based on the type of products being consumed.

* **Collaborative filtering**

This method of filtering is what’s used in “People who watched this show also watched…” types of recommenders. Collaborative filtering uses behavioral data to determine what a person will like based on how their preferences compare to other users. Whereas content-based filtering focuses on linking products to other products, collaborative filtering builds predictions by linking similar customer profiles**.**

* **Hybrid filtering**

Hybrid filtering attempts to address the shortcomings of both content-based filtering and collaborative filtering by combining the two methods. As such, it’s the most effective of the three types of recommendation systems.

**Blogs:-** <https://amplitude.com/blog/recommendation-engine#hybrid-filtering>,

<https://www.kaggle.com/code/prashant111/recommender-systems-in-python>

**Examples of recommendation engines in action:-**

* **Amazon**

Amazon is the home of one of the most famous recommendation engines on the planet. The ecommerce giant sells tens of millions of unique products, and every one of them is cataloged for use by its recommender. In fact, Amazon was one of the first major ecommerce companies to pioneer content-based filtering and filed a patent for their system as far back as 2001. Two decades later, Amazon’s recommendations account for as much as 35% of their total sales.

* **Netflix**

Netflix is another data-driven company that leverages recommendation systems to boost customer satisfaction. The same Mckinsey study we mentioned above highlights that 75% of Netflix viewing is driven by recommendations. In fact, Netflix is so obsessed with providing the best results for users that they held data science competitions called Netflix Prize where one with the most accurate movie recommendation algorithm wins a prize worth $1,000,000.

* **Spotify**

Every week, Spotify generates a new customized playlist for each subscriber called “Discover Weekly” which is a personalized list of 30 songs based on users’ unique music tastes. Their acquisition of Echo Nest, a music intelligence and data-analytics startup, enable them to create a music recommendation engine that uses three different types of recommendation models:

* **Collaborative filtering**
* **Natural language processing**
* **Audio file analysis**

**Some codes links:-**

* [Getting Started with a Movie Recommendation System | Kaggle](https://www.kaggle.com/code/ibtesama/getting-started-with-a-movie-recommendation-system)
* [Million Song - Recommendation Engines | Kaggle](https://www.kaggle.com/code/mgmarques/million-song-recommendation-engines)
* <https://www.kaggle.com/code/aliessamali/recommendation-systems-e-commerce>