

Video Recommender System for Digital Learning

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Introduction

The aim of our thesis is to build a video recommender system for the around 100,000 currently enrolled Danish college students, focusing on the hard natural sciences subjects mathematics, physics and chemistry. A recommender system can save the student time by providing material that is best suited for the individual student's way of learning.

What are recommender systems?

A recommender system predicts the rating that a user will give some content, based on the user's previous ratings. This can be done in two ways, 1) Content-based filtering and 2) Collaborative filtering. Content-based algorithms use only the individual user's previous ratings to predict future ratings, while collaborative filtering algorithms use other similar-looking user's ratings to predict a rating. Hybrid recommender systems combine these two models. The highest rated content in either model is then recommended to the user. Predictive accuracy can be measured by running the algorithm on a subset of rated content, and then having the algorithm predict the rating of an already known rating. The difference between predicted and known rating is the accuracy. Machine learning systems are used to implement these recommender algorithms.

Examples of recommender systems are Netflix and IMDb that recommend movies the user is most likely to want to watch. Netflix' recommendation algorithm, called Cinematch, uses a hybrid system to implement this.

Modules

- Spider: Crawls YouTube and builds up an index of potential videos, for further filtration.
- Video filtration: Filters out non-relevant videos from the crawled videos.
- Categorisation: Categorises videos into subcategories within education.
- Initial rating: Performs the initial rating based on implicit ratings (e.g. likes), as a way to overcome the cold start problem.
- Recommender back-end: The content-based recommender algorithm.
- Front-end: The front-end which the students use to search for and rate videos with.

Overview of Video Recommender System

