Topic: Synthesis and Evaluation of various Recommender System approaches against a Movie database dataset

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# Abstract

The idea of this thesis is to implement and evaluate multiple recommender system categories against the publicly available MovieLens dataset. Primary objective is to see how using various implementations and algorithms affects the recommendations and end-user experience.

We will be using both the Collaborative filtering algorithms (both neighborhood and model-based) and Content-based recommender system implementations.

For evaluation metrics, the main focus will be on comparison between predicted and actual outcomes. Nonetheless, an attempt will be made in order to evaluate predicted users experience.

The outcome of this thesis should be a clear overview of which implementation brings the best results and what steps could be taken to further improve the results.

# Recommender Systems

## Introduction

Recommender systems have evolved as a natural response to ever growing amount of information available to wide audiences of users. With the rise of Internet and general availability of it to common users, it has become necessary to help users navigate the content and steer them towards the new options they might have not anticipated in the first place.

Strictly technically speaking, Recommender systems represent a subclass of Information filtering systems whose main purpose is to predict the “ratings” or “preferences” a user would give to an item [1].

## History

There does not seem to be an official information on when the recommender systems have been mentioned for the first time.

One of the earliest mentions of Recommender systems as such dates to early 1990’s where the official term has been mentioned in a technical report written by Jussi Karlgren at Columbia University [2].

Since then, especially with the rise of Cloud computing and Big data, when processing of vast amounts of data became possible, recommender systems have become an important aspect and indispensable commodity of all successful businesses.

It is especially important to mention the efforts of GroupLens working group [3]. GroupLens is a group of scientists from the department of computer science and engineering in University of Minnesota. This group has pushed forward the efforts towards both publishing various research papers on recommender systems and publishing the freely available datasets to be analyzed and used for educational and research purposes. Some of their featured projects include MovieLens – a web site that helps people find movies to watch, Cyclopath – an editable map where anyone can find maps and routes for riding bicycle and LensKit – open source toolkit for building, researching and studying recommender systems. MovieLens is also the dataset that this thesis is using for evaluation of results.

## Overview

Overview of recommender systems, how they are using in e-shops, collaborative filtering, content-based, blab la

## Netflix, Last.fm and Pandora

Write a bit about how recommender systems were/are used at these

## Recommender systems and Big data

Search for some work in this area and write a bit about it …

## Future of Recommender systems

Write a bit about how we see the future of Recommender systems, etc.

# Evaluation and experiments

Write a bit about the data set that will be used. Show some data, etc.

Write about how the results will be evaluated.