Term Project

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Recommender System in e-business

Problem Statement

Majority of existing approaches to recommender systems focus on recommending the most relevant items to individual users and do not take into consideration any contextual information, such as time, place and the company of other people which becomes crucial in order to recommend items to users under certain circumstances.

Solution

Context-aware recommender systems (CARS), address this and several other related questions, and demonstrate that, depending on the application domain and the available data, at least certain contextual information can be useful for providing better recommendations.This inclusion of the contextual information into the recommendation process presents opportunities for richer and more diverse interactions between the end-users and recommender systems

Approaches

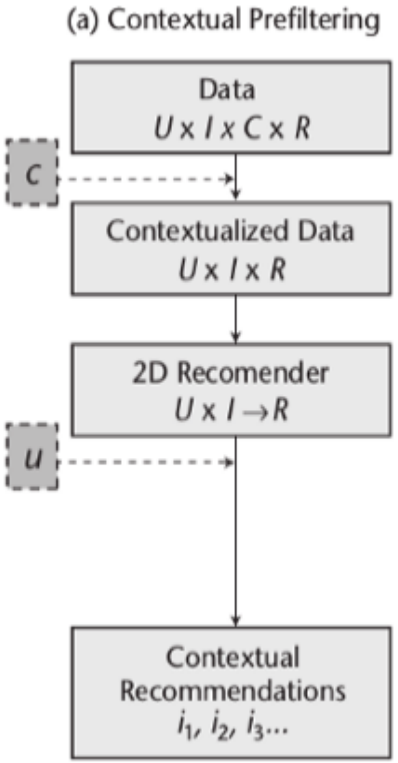
Prefiltering: Context is used to select some set of data and then predict like a traditional recommender system. One way of doing that is splitting items or users by context as if they were different items or users

Postfiltering: Ratings are predicted and then the results are filtered using the context. This can be implemented by ordering the results depending on the context or by just filtering the results

Modeling: The context is used right in the model. It is more complex and could be implemented by multiple machine learning models like SVM, matrix factorization or a markov chain

Contextual Prefiltering

Context is used to select some set of data and then predict like a traditional recommender system. One way of doing that is splitting items or users by context as if they were different items or users



Data Description

- Data set: InCarsMusic
- Context considered: Driving style[Sport driving; Relaxed driving], Mood, Sleepiness,Traffic conditions
- Ratings: 0,1,2,3,4,5
- Total Users: 42
- Total Unique data points: 1741
- Total items: 139

Work Flow

Data Input

01

Contents

02

Context Analyzer & Pre Processing

Pre filtering context aware system

i) Generate weights for each content

II) Group the ratings for each content

03

Contents

Contents

04

Collaborative filtering

i) Generate user item matrix

II) Get the similarity matrix for users

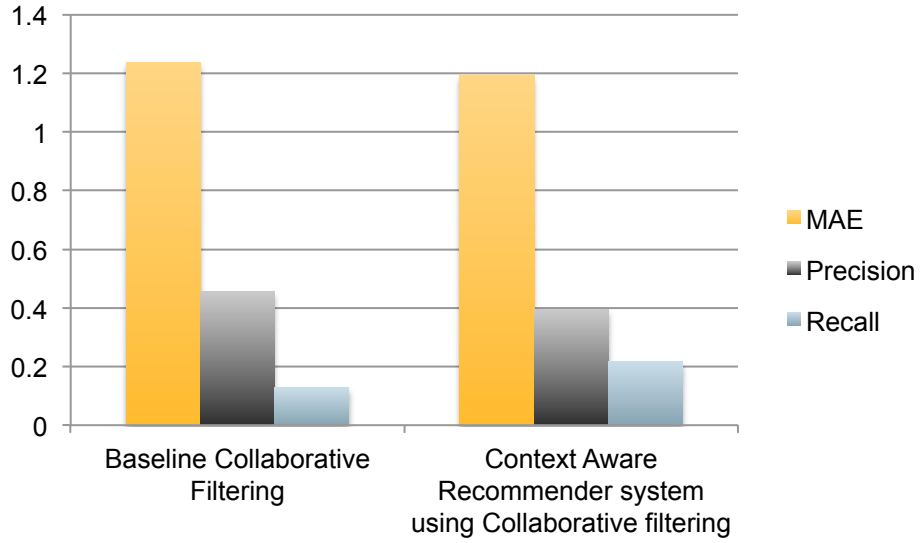
Recommend top n items considering the context weight

05

Contents

Results

Column1	Baseline Collaborative Filtering	Context Aware Recommender system using Collaborative filtering
MAE	1.2372	1.19356
Precision	0.4542	0.39437
Recall	0.1284	0.216364



Recommendations

In [72]:
```
1 displayRecommendations(recommendations, musicTracks)
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	artist	title	genre	Rating
1	B.B.King	The Thrill is Gone	Blues music	2.684420
2	Bob Marley	No Woman No Cry	Reggae music	2.619660
3	Johnny Cash	I Walk the Line	Country music	2.589260
4	Dire Straits	Sultans of Swing	Rock music	2.578281
5	Bee Gees	Stayin Alive	Disco music	2.556913
6	Helping Haiti	Everybody Hurts	Pop music	2.501902
7	Chic	Good Times	Disco music	2.435992
8	ABBA	Dancing Queen	Pop music	2.402494
9	Gossip	Heavy Cross - Album Version	Pop music	2.354185
10	Thelonious Monk	Straight No Chaser	Jazz music	2.340854

Refrences

- *https://medium.com/@andresespinosapc/the-basics-of-context-aware-recommendations-5dd7a939049b*
- *https://link.springer.com/chapter/10.1007/978-0-387-85820-3_7*
- *https://github.com/primalpop/camrs/tree/master/code*
- *https://github.com/ThomasWWebb/Context-Aware-Recommender-System*

Thank You!