TV Program Recommendation

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Personalized recommendation is the main domain at bunch of systems, which are based on content, item's attributes, properties and similarity between them. Factors that create a demand on recommender systems are influenced by the society and its desire for knowledge of news and one of the easiest ways for human to handle information is by audio-visual representation of data. Wherever we are, TV broadcast is the most common temptation as much for our sight as for our hearing.

We aim towards a recommendation of items included in TV programme according to item's attributes and similarity between users' ratings. According to our analysis of the domain, we decided to propose our recommendation algorithm as combination of collaborative filtering (i.e. we utilize user correlation and item similarity) with content-based. So we propose a hybrid recommendation system. Our content-based part focuses on combination of airtime of TV show and its duration in order to get better results than default collaborative recommendation.

We have divided TV shows into groups according their duration by analyzing a sample of 1000 TV shows (gathered from TV programme for 2 days and 75 TV stations) and years of watching TV.

After lots of various settings we ended up with four groups (see Table 1.):

1. TV shows with duration less than 25 minutes (duration of the entertainment show)
2. TV shows with duration less than 50 minutes (usually episode from TV series)
3. TV shows with duration less than 75 minutes (news/documentary)
4. TV shows with duration more than 75 minutes (most of the movies)

Our hypothesis is that our recommendation method improves collaborative filtering based on utilizing duration of TV watching time.

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Table 1. Division of the TV shows into groups by duration.

	duration/25 integer	count(duration) bigint
1	0	199
2	1	317
3	2	182
4	3	142
5	4	80
6	5	13
7	6	8
8	7	2
9	8	1
10	10	1

We implemented our recommendation algorithm as a part of web application that we chose as the best method of proving our hypothesis. We plan to evaluate our algorithm in two sequential experiments. In the first experiment we gathered a group of 30 people, mostly colleagues who will for two weeks creating our dataset by their ratings of TV shows in real-time setting. Our experiments were executed in controlled environment by team of professionals, who tried their best to give us relevant feedback. We also needed to decrease impact of the Cold Start Problem on our recommender, so we had chosen for users to fill in the forms (questionnaires), from which we could gather initial information about users. Before the second experiment, we deployed our recommendation algorithms at dataset and customized parameters for recommendation. Second experiment was executed within the same web application but TV shows are sorted by result of our recommendation algorithm and by using metric Precision @5 we got the outcome of our experiment.

Using the exemplary equation of : $precision@N = \frac{H}{N*|T|}$, where H stands for true hits and T for number of test ratings, this metric supposed to be exactly what we needed to conclude our research [1].

Our implementation of application were changed several times to satisfy needs of users and make system as simple as possible, while maintaining the whole needed functionality.

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References

[1] Paolo Cremonesi, Yehuda Koren, and Roberto Turrin. 2010. Performance of recommender algorithms on top-n recommendation tasks. In *Proceedings of the fourth ACM conference on Recommender systems* (RecSys '10). ACM, New York, NY, USA, 39-46. http://doi.acm.org/10.1145/1864708.1864721