ABSTRACT

Master's dissertation: 90 pp., 27 figs., 15 tables, 43 sources, 1 appendix.

Topicality. Electronic information becomes an integral part of modern human life. Information is stored and changed in information systems, becoming a valuable national resource, and further satisfies human information needs. Recommender systems help users who are faced with a huge variety of products by identifying specific products that can meet the tastes or preferences of each user. The most sophisticated systems study the tastes of each user and provide personalized recommendations.

The popularity of recommendation systems is constantly growing. On many sites such as YouTube, Netflix and Twitter, modern recommendation systems have already been created. Algorithms work quickly and give successful recommendations, but over time the information in databases grows and there comes a time when the period of formation of recommendations becomes so large that users have to expect a recommendation.

This problem is growing and the recommendation systems have to change the algorithmic support. The use of basic methods of providing recommendations is becoming more and more ineffective. Algorithms have been working too long and there is a question of improving them

Relationship of work with scientific programs, plans, themes. The work was performed at the Department of Computer-Aided Management And Data Processing Systems of the National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute» within the topic «Mathematical models and technologies in DSS » (state registration number 0117U000923).

The purpose of the study is to improve the speed of the process of making recommendations to users of web directories.

To achieve the goal, you need to do the following **tasks**:

- to make an overview of existing algorithms of providing recommendations;

- to make an overview of existing methods of machine learning providing recommendations to users.
- make an overview of existing solutions for modifying the co-operative, context and hybrid filtering algorithm;
- find algorithm bottlenecks to improve them;
- to develop a scheme of system architecture;
- create a relational database;
- to develop the algorithmic and software of the process of formation of recommendations to users of web catalogs;
- to conduct research and study the efficiency of the developed algorithms;
- analyze the results, gives the modified algorithm of collaborative filtering and make a conclusion about its effectiveness;

The **object** of research is the process of forming recommendations to users of web catalogs.

Subject of research is to increase the runtime of the algorithm, providing recommendations, improving the algorithm.

The **research methods** used in the work are based on the method of collaborative filtering and decision-making methods of constructing agreed collective rankings.

Scientific novelty of the obtained results. On the basis of the analysis of algorithms of formation of recommendations to users of web catalogs modification of algorithm of co-operative filtering which allows to increase speed of process of granting of recommendations is offered. To solve the problem of forming recommendations, new users are offered to use the algorithm of building a median ranking, which is a Kemeni median.

Publications

1. I. Kochubey, O. Zhurakovska, “Modified algorithm of collaborative filtering for forming user recommendations,” in KPI science news, 2020, pp. 43-49 (фахове видання). E-ISSN: 1681-6048 / 2308-8893.

2. І. Кочубей, О. Жураковська, “Використання медіани Кемені в алгоритмі формування рекомендацій,” в *Системні дослідження та інформаційні технології,* 2020 (фахове видання).
3. І. Кочубей, О. Жураковська, “Algorithm of forming recommendations for users of web directories,” в *науково-практичної конференції молодих вчених та студентів «Інформаційні системи та технології управління(ІСТУ-2020)»* 2020.

RECOMMENDATION SYSTEMS, COLLABORATIVE FILTRATION, MODIFIED ALGORITHM, MACHINE LEARNING, KEMENI MEDIANA