ABSTRACT

Explanatory note size – 126 pages, contains 11 illustrations, 24 tables, 2 applications, 22 references.

Topicality. The study addresses the problem of generating group recommendations within recommendation systems, where the focus lies on methods for reconciling individual user preferences. It highlights the characteristics of existing approaches, their strengths, and their limitations in maintaining a balance between personal preferences and collective decision-making. The need for improving these methods and developing more effective algorithms for group recommendations has been identified.

The aim of the study. The main goal is to improve the accuracy of recommendations for a group of users by developing and implementing a specialized recommendation model.

The object of research: software for recommendation systems.

The subject of research: methods and algorithms for generating recommendations for a group of users, including models for aggregating individual preferences, collective interaction, and group dynamics.

To achieve this goal, the **following tasks** were formulated:

- analysis of existing methods and algorithms for recommendation systems, including classical approaches (collaborative and content-based filtering), hybrid models, and modern deep learning solutions, with a focus on the specifics of group recommendations;
- development of a model architecture for group recommendations that accounts for individual user preferences and produces consistent recommendations for a group;
- implementation of a prototype recommendation system based on the proposed model, integrating mechanisms for processing and aggregating user data;

– evaluation of the system's effectiveness through experimental testing on real or synthetic data, comparison with existing algorithms, and analysis of the accuracy, relevance, and personalization of recommendations for a group of users.

The scientific novelty lies in improving the recommendation model based on the TTM architecture. The model was extended with a method for aggregating individual user embeddings to form a group profile, which made it possible to generate recommendations not only for individual users but also for groups, taking into account the preferences of all participants.

The practical value consists in developing a fully functional recommendation system for board games tailored to groups of users, which can be used by gaming clubs, anti-cafes, event agencies, and families to quickly select games that match the interests of all group members. The proposed architecture is universal and can be adapted to other domains of group recommendations.

Relationship with working with scientific programs, plans, topics. Work was performed at the Department of Informatics and Software Engineering of the National Technical University of Ukraine «Kyiv Polytechnic Institute. Igor Sikorsky».

Approbation. The scientific provisions of the dissertation were tested at the IX International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies (SoftTech-2025)".

Publications. The scientific provisions of the dissertation were published in:

1) Honcharenko A.A., Finogenov O.D. Methods and Algorithms of Recommendation Systems for a Group of Users. Proceedings of the IX International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies (SoftTech-2025)". Section of the Department of Informatics and Software Engineering. November 26–28, 2025. Kyiv.

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