ABSTRACT

Explanatory note size – 98 pages, contains 19 illustrations, 18 tables, 2 applications, 10 references.

Topicality. The topic is important from the point of view of the development of modern technologies in the sports industry. The implementation of this work contributes to improving the training process, increasing the effectiveness of training and ensuring better interaction between athletes and coaches

The aim of the study. To ensure effective exchange of digital data of physical training between a smart watch used by an athlete and other devices used by coaches.

The object of research: Fitness and sports software

The subject of research: Methods and algorithms for collecting, storing and analyzing an athlete's physical data, methods for organizing interaction between devices used by a coach and an athlete

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

− Analyze existing solutions and identify their shortcomings in the context of interaction between an athlete and coaches.

− Implement a large language model for generating personalized training for athletes.

− Implement functionality for data exchange between an athlete and a coach, including the ability to adjust the created training programs.

The scientific novelty The use of the MVVM pattern has been further developed. At the Model level, the use of two types of data storage is proposed to ensure work in online and offline modes. At the ViewModel level, the use of a large language model is proposed, which is integrated into the system for generating personalized training plans.

The practical value of the results obtained lies in the development of working software that allows athletes to create personalized training, and their coaches to review, correct and approve or reject them.

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 approbated at the VII International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies SoftTech-2024" - Kyiv, November 20-22, 2024.

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

1) Shcherbakov A.O., Likhousova T.A. Smart watch software for independent sports and fitness // System Technologies, vol. 5(148), 2023 – pp. 99-108

2) Shcherbakov A.O., Likhouzova T.A. An architectural solution for the interaction of a smart watch with other digital devices // VII International Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies" (SoftTech-2024). Materials of the conference. December 20-22, 2024 Kyiv. - p. 144-146

Keywords: IOS, WatchOS, HealthKit, Firebase, MVVM.