

## ABSTRACT

*Master's dissertation consists 84 pages, 17 images, 25 tables, 27 referring sources.*

**Topicality:** Heart disease accounts for a significant percentage of deaths in both Ukraine and most countries. For example, every year in Ukraine more than 68% of people die from cardiovascular disease. An important factor in the fight against the disease is the prevention and detection of the disease in its early stages. One of the main methods of diagnosing the heart is electrocardiography, so it is very important to quickly and accurately analyze the electrocardiogram (ECG).

**The purpose of the dissertation research** is expanding the capabilities of automatic analysis of electrocardiograms by creating a Word2Vec model based on selected waves in the ECG

**Object of study:** electrocardiograms.

**Subject of research:** processing of vector representation of ECG signal by NLP methods.

**Research Methods:** In this dissertation, natural language processing methods based on rules, dictionaries and existing linguistic resources, and probabilistic thematic models based on a set of machine learning methods have been applied.

**Scientific novelty:** new approach for representation in the vector structure of the heart rate, the ability to find the difference between the signals by calculating the cosine of similarity and the use of the TextRank algorithm to find key beats, which shows the importance of heartbeat.

**The practical value of the obtained results** is determined by the fact that the proposed approach to ECG analysis reduces the amount of data for ECG analysis, shows good accuracy of the analysis.

**Relationship with working with scientific programs, plans, topics:** work was performed at the Department of Automated Information Processing and Management Systems of the National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute» within the topic «Methods and technologies of

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**Testing:** The main provisions of the work were reported and discussed at the conference "Informatics and Computer Engineering - IOT-2020".

**Publications:** Theses of the thesis are published in « Informatics and Computer Engineering - IOT-2020».

Keywords: ECG, WORD2VEC, NATURAL LANGUAGE PROCESSING METHODS, WORD EMBEDDING.