

28. BIG DATA IN HEALTHCARE

Makarevich D.N.

*Belarusian State University of Informatics and Radioelectronics
Minsk, Republic of Belarus*

Perepelitsa L.A. – Lecturer

The paper describes the potential of using Big data analytics in healthcare, considers the possibilities of its use in data collection, analysis and statistics.

Medicine is the science that works with a large amount of data, characterised by complexity, diversity and accuracy. Not so long ago, most of the data was stored in a hard copy form, but the discovery of Big data analysis allowed to make substantial changes in data processing. The concept of Big Data in healthcare is a global approach to the analysis, storage and usage of large amounts of data. It provides a

wide range of medical functions such as public health management, disease monitoring, medical equipment support, etc.

To begin with, it is necessary to give the definition of Big data and analytics. This term has appeared not so long ago, but it is constantly changing and evolving. When traditional tools ceased to cover the need for effective and fast processing information, people managed to create new special algorithms for processing and storing hundreds of terabytes of memory. They are commonly called Big data. So, today Big data is defined as data that contains greater variety, arriving in increasing volumes and with more velocity. This is also known as the three Vs. Making sense of this sea of data is the challenge of this age. This is where big data analytics can help. [1] Big data analytics describes the process of uncovering trends, patterns, and correlations in large amounts of raw data to help make data-informed decisions.

The main feature of using Big Data in healthcare is to improve the diagnosis and treatment of diseases. Collecting and storing information about the patient's health status provides Electronic Patient Health Record (EHR). It stores patient health data, socio-demographics, medical images, genetics and medical evidence. The source helps medical workers identify patterns, predict the risk of different diseases and generate the optimal treatment method. For example, the EHR is successfully used for post-market surveillance of medications, risk of cardiovascular diseases and diabetes.

Lack of information fields and human control are the main problems of EHR diagnostics. However, now the developers from the United Kingdom have introduced a new integral resource for future Clinical Decision Support Systems (CDSSs) that allows to overcome limitations in multitasking and information fields. The resource includes more new possibilities in health monitoring: improved medication or doctor reminders, identification of the need for rehospitalization and assessment of compliance with the protocol.

As the result of the above technologies and their presentation in an understandable form to users, mobile applications have appeared. In the list of the most downloaded mobile applications Health apps take the third position. According to the Intercontinental Marketing Statistic Health Institute's research the number of mobile applications dedicated to health rises up to 165,000. The main aim of these applications is to help individuals monitor their own health conditions, such as heart disease, diabetes, pregnancy, mental health, etc. Also this application allows to make some changes in users' lifestyles (nutrition, physical activities, rest, relaxation, addiction control, etc.).

It is worth highlighting one of the most popular applications to track women's health – Flo. It is the project of Belarusian developers. Health marathons, stress management, checklist of coronavirus symptoms, meditation lessons, fitness, recommendations for improving sleep [2] – all these functions are carried out with the help of Artificial Intelligence and Big data analysis.

The use of Big data can considerably improve the quality and efficiency of healthcare. It has become a crucial element for the processing of a large amount of information. Thanks to this, Big data health applications go beyond velocity, volume and variety, which provide opportunities for professionals in both health and technology areas. Big data analytics and applications in healthcare are at a nascent stage of development, but rapid advances in platforms and tools can accelerate their maturing process [3].

References:

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