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FEASIBILITY STUDY OF ARTIFICIAL INTELLIGENCE, VOICE ANALYSIS, COMPUTER VISION AND BIG DATA IN SPHERE OF PSYCHOLOGY

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Introduction. Current work aims to find the ways of raising the efficiency of psychological practice with the help of technologies. In the current situation, where we have lack of qualified psychologists and declining quality of end diagnoses, technological optimization should be considered [1].
Technologies of Artificial intelligence (also machine and deep learning), voice-to-text and text analysis, computer vision and big data were on the scope of the study. By overviewing latest scientific publications with description of new technology-based methods and several interviews with subject matter experts from sphere of psychology, it is planned to assess the relevance and efficiency of mentioned technologies in mental health treatment.

Main part. This paper overviews each technology in terms of practical application to help in diagnosing, monitoring and recovery of mental health issues. The most probable way to effectively use these technologies - is to create a platform for psychologists and patients, which will use integration of the most relevant technological methods.
Artificial intelligence comes first in the scope of analysis. Today, it is one of the most presented methods in scientific literature, according to the number of publications. In the text of work author gives a classification of the existing algorithms taking into consideration efficiency of proposed AI-methods and complexity of technical implementation into a platform. Diagnose detection algorithms based on different types of medical and social data is the most effective cluster to the current date. For example, such type of algorithm was tested and described in research concerned stress detection in office environments. Proposed model architecture allowed to find a mental problem of the employee on early stages and take preventive actions to improve wellbeing of a person [2]. Another cluster of algorithms were highly successful in classification of existing illnesses and proposing more efficient treatment. Other clusters of algorithms were not so efficient or technically easy for implementation into a platform. However, we can see a positive trend in this sphere and technologies become more available to public usage.
Voice and text analysis utilization in sphere of psychology comes second in the scope of analysis. The most popular project powered such technological stack is “8 Billions Minds”, which was held by international research group in Great Britain [1]. The idea and working method of the project used texts of conversations between psychologists and their patients. Analysis of the text allowed researches to evaluate efficiency of treatment and propose concrete recommendations for further improvement. Another breakthrough came from MIT research group. They were able to create a model capable of detecting potential problems in open-context conversations [3]. In conjunction with voice recognition technology proposed method creates wide possibilities in practical application. For example, this technology could be used inside of chatbot or voice assistant.
Computer vision technology is widely used to detect potential problems based on facial patterns of the patients during therapy sessions. Computer vision solutions multiplies their efficiency, when they are integrated with Big Data technology. Collected data in short terms could be compared with data in medical databases. Gained data-driven insights might provide psychologists with potential diagnoses and propose plan of treatment.
Optimal combination of proposed methods, strategy for the platform development and market entry, potential legal and business-related issues would be covered in the next works.

Conclusion. In this paper we have overviewed and classified artificial intelligence (also machine and deep learning), voice-to-text and text analysis, computer vision and big data in terms of relevant usage

in mental health treatment. Classification, prioritization and potential technical implementation into a platform was proposed. Proposed methodology might improve time-per-patient metric and raise the efficiency of the end diagnoses proposition by therapists. Knowledgeable and wisely planned combination of such technologies gives psychology a boost. Moreover, potential technological platform would collect very valuable medical data, which will be handy for researches in this area. This initiative might speed up scientific progress in domain of psychology and show practical results in terms of mental health issues treatment.

References:

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