

EARLY DIAGNOSIS OF DISEASES USING ARTIFICIAL INTELLIGENCE

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Annotation. This article studies the early detection and diagnosis of diseases using Artificial Intelligence, which plays an important role in the field of modern educational technologies. Artificial intelligence (AI) is one of the most advanced achievements of modern technologies, which has been rapidly entering various areas of medicine in recent years. This article covers the mechanisms of operation of artificial intelligence systems, what results are achieved based on their main components - machine learning, deep learning and neural networks. The article considers the future prospects of this technology using scientific research, advanced software platforms based on AI (for example, IBM Watson, Google AI, Aidoc). In general, artificial intelligence offers revolutionary approaches to medical diagnosis and plays an invaluable role in increasing the efficiency of the healthcare system.

Keywords: Artificial Intelligence (AI), Early Diagnosis, Medical Technologies, Machine Learning, Deep Learning, Google Health

In recent years, artificial intelligence (AI) technologies have been causing significant changes in the field of medicine. In particular, artificial intelligence capabilities in early detection of diseases provide doctors with accurate, fast and reliable results. In modern medicine, the integration of AI tools is used in diagnostics, image analysis, genetic research and individual treatment plans. This expands the possibilities of improving the quality of healthcare and saving patients' lives. What is artificial intelligence and how does it work? Artificial intelligence is a set of computer systems or programs designed to perform tasks related to human intelligence. In medicine, AI algorithms work on the basis of techniques such as machine learning, deep learning, and neural networks. These systems study large amounts of data (e.g., X-ray, CT, MRI images, laboratory results, patient histories) and provide analysis and predictions based on it.

SI Cancer Early Detection

Since cancer is often detected at a late stage, the treatment process is complicated. Computer vision algorithms based on artificial intelligence can analyze X-ray, CT and MRI images and detect early signs of lung, breast or skin cancer with high accuracy. For example, the SI model developed by Google Health has been shown to outperform expert radiologists in detecting breast cancer. This, in turn, helps to detect the disease early and serves as the basis for treating patients based on accurate diagnoses.

The role of Google DeepMind Health in detecting eye diseases.

Google DeepMind Health helps ophthalmologists diagnose eye diseases. Vision loss is a major health problem among older people: one in three people will have a vision-threatening condition by the age of 65. In collaboration with Moorfields Eye Hospital and Google Health, a dataset of retinal images was created, and a study was conducted to assess the ability of an artificial intelligence (AI) system to predict the development of exAMD, using expert assessment.

This helps show that our system can perform as well as or better than clinicians in predicting whether an eye will progress to exAMD in the next 6 months. Our contribution highlights the potential of using AI in prevention research for diseases like exAMD. Google Health has now developed a model that can segment these eye scans into thirteen anatomical categories. The segmented data was combined with the raw scans, and both were used as input to a prediction model, which helps to identify early the risk of a patient's other eye progressing to exAMD in the next six months.

The main advantage of artificial intelligence is its ability to analyze large amounts of data with high accuracy in a short time. This not only helps in early diagnosis, but also in developing individual treatment strategies. However, there are problems related to the full reliability of the systems, their integration into clinical practice, and data confidentiality.

Disadvantages and risks: Potential for false positives: If an AI model is trained with the wrong data, errors can occur. Data privacy: It is important to ensure the protection of medical data. Ethical issues: If AI makes a diagnosis, who will be responsible for the patient? Trust in human doctors: Overreliance on AI can lead to trust issues among people. Early detection of diseases using artificial intelligence is the future of medicine. This technology will not only make doctors' work easier, but also increase the chances of saving a patient's life by detecting the disease at an early stage. However, AI should not replace a human doctor, but rather be an assistant to him.

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