# Section IV
# Секція COMPUTER DIAGNOSTICS
# КОМП'ЮТЕРНА ДІАГНОСТИКА

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## USE OF COMPUTER VISION IN MEDICINE

**Abstract.** This article explores computer vision technologies in the healthcare industry, along with some of their use cases and examples to help healthcare professionals achieve digital excellence.
**Keywords:** computer vision, medicine, images, patients, diagnostics.

**Relevance of research.** In medicine, there are many problems related to image processing, on which the doctor spends a lot of time. If you consider how computer vision is used in medicine, it will turn out that this technology is very promising.

Computer vision is used in the healthcare sector to improve medical treatments and procedures, accelerate healthcare research and improve the overall patient experience. It also enables healthcare professionals to make better decisions about patient treatment.

Among the main tasks solved by machine vision, the following are distinguished [1]:

– recognition of objects and text;
– identification of persons;
– detection;
– restoration of the shape of objects according to the image [3,4];
– movement assessment;
– recovery of what is happening in the image.

**Purpose of the study.** Show how advanced information technologies can affect the quality of medical care, diagnosis and treatment of patients.

**Basic research materials.** Computer vision can be used in medicine in the following ways:

1. Detection of diseases. For example, the Israeli company Aidoc uses artificial intelligence and image recognition technology to improve the efficiency of radiologists [2].

Aidoc detects intracranial hemorrhages based on computed tomography images — the technology analyzes CT images and makes a diagnosis.

2. Diagnostics. Machine vision helps diagnose diabetic diseases. IDx is one of the companies developing solutions to detect diabetic retinopathy. The system interprets photos of the retina and makes a diagnosis on its own.

3. Intelligent operating facilities. Computer vision can automate the process of recording surgical procedures, which involve various repetitive and error-prone tasks. Surgeons forget instruments inside a patient in about 1,500 surgeries a year in America, and computer vision can track surgical instruments to eliminate this problem.

4. Reduce patient confusion. Misidentification of patients is a common problem in the healthcare sector. This can lead to dangerous consequences for the patient and healthcare worker. A computer vision facial recognition system can solve this problem.

5. Improve workplace safety. Surveillance systems based on computer vision and artificial intelligence can track personnel for potential incidents and alert appropriate authorities if necessary. They can also monitor whether personnel are using the proper protective equipment and procedures.

6. Surgical instructions. Computer vision technology is also used to guide surgeons during procedures using cameras equipped with machine vision.

**Conclusion**

The list of improvements thanks to the use of computer vision technology is impressive. This greatly contributes to the early recognition of diseases, increasing the accuracy of the interpretation of medical images, more accurate diagnosis, which leads to more affordable treatment.

Analysts forecast the global market for computer vision solutions in the healthcare sector to grow significantly to 2.4 billion USD by 2026 from 262 million USD in 2019 [2].

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