

APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN MEDICAL EDUCATION

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Annotation: The field of artificial intelligence is a recent addition to technology. Its goal is to simulate, extend, and expand human intellect via the study and development of theory, method, technique, and application system using computer technology. New artificial intelligence technologies have brought about significant changes to the traditional medical setting. For instance, a patient's diagnosis derived from biochemical, endoscopic, ultrasonographic, radiographic, and pathological exams has been successfully advanced with reduced human workload and increased accuracy. Better surgical outcomes have significantly improved the medical care provided during the perioperative phase, which includes preoperative planning, surgery, and postoperative recuperation.

Keywords: *artificial intelligence, medicine, education.*

The future of artificial intelligence in medicine is still up for debate. Machines (computers) process large datasets (big data) using layered mathematical models (algorithms) to find patterns that biostatisticians are unable to interpret. Artificial intelligence (AI) is being used to analyze images in radiology, pathology, and dermatology with success; the diagnostic accuracy and speed of these applications surpass those of medical professionals. The performance of the system is consistently improved by merging physicians and machines, even if diagnostic confidence is never 100%.

AI is extensively used in a variety of industries and plays an important part in technological advancements, a new idea has emerged: Artificial Intelligence Plus (AI plus). AI + integrates the achievements and technologies of AI with existing sectors to produce new productivity, innovation, and development. According to AI research, the output-input ratio in medicine is more promising than in other fields [1].

Artificial intelligence in medical diagnosis - When a doctor uses AI to diagnose a patient with a certain illness/condition, the time necessary for a diagnosis is dramatically decreased, and diagnostic efficiency is significantly increased. By analyzing clinical data from radiology (such as X-ray, CT, and MRI), pathology, endoscopic, ultrasonographic, and biochemical examinations for related human body indicators, AI can produce results quickly and replace the ineffective traditional medical model, which is unable to provide timely and accurate conclusions, particularly for complex diagnoses.

Artificial Intelligence in Surgery - With the advancement of AI technology, the notion of an AI-enhanced surgical system has emerged.

The most breakthrough production of this notion in the modern period is the Da Vinci surgical AI system. The introduction of the Da Vinci surgical system, a brilliant invention unequaled in human history, enables surgical treatment more minimally invasive, with the benefits of a sharper vision, more precise and easy operation, and even remote operation. With the advancement of AI technology, the notion of an AI-enhanced surgical system has emerged.

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Artificial Intelligence in Education - The typical hospital management strategy focuses on the administrative department's overall planning, which can lead to omissions and inefficient distribution of medical resources. Regulations for

AI technologies have undergone significant changes. Scholars have used short-term memory neural network AI technology to predict accurate waiting times in emergency departments, improving medical efficiency, patient experience, and resource redistribution [2]. Artificial Intelligence algorithms were used to reduce average hospitalization time by 7%, select the optimal number of beds, and optimize hospital resources and inputs based on patient data, route to hospital, and climate [3]. A real-time prediction approach using artificial neural networks correctly predicted readmission rates, facilitating patient preparation and enhancing hospital management [4]. Artificial Intelligence technology has improved patient counseling, hospital administration, resource allocation, and personalized clinical care [5]. Medical students are the future of medical growth, but their training is challenging owing to the extensive and complex professional knowledge necessary. Medical students' progress will be limited if they solely study textbooks and specimens. AI technology has enhanced the learning experience for medical students, making it more diverse and engaging. AI-based problem-based learning improves student comprehension of clinical disorders [6]. Using an AI system to learn surgery has led to improved performance and confidence among medical students [7]. The AI simulation-based surgical training system, which combines AI and simulation to study surgical skills, provides objective feedback and improves student learning [8]. AI technology can track students' mental health and academic performance, allowing colleges to better understand their students' situations. Additionally, medical students may benefit from 3DP and MR technologies, which offer immersive learning experiences beyond traditional textbooks. The 3DP medical model, powered by intelligent algorithms, allows students to study three-dimensional anatomy and practice surgical skills [9, 10]. MR technology can enhance students' understanding of human anatomy by allowing them to manipulate any size or layer, allowing for risk-free simulation of surgery training. 3DP or MR-based support approaches are commonly used in medical education [11].

Artificial intelligence in Robotic surgery - We are talking about robots that participate in surgical operations, and accompany patients during and after surgery. The surgeon includes "head controllers" that provide movement of the binocular chamber the receiver works from a longstanding console. One on the TV set next to the patient several surgical instruments are attached. The surgeon ordered these instruments before starting, to put them in the operational field. A three-dimensional surgical lens is transmitted to the monitor to ensure the spatial reciprocity of the instruments until the surgeon is next to the console.

Artificial Intelligence in 3D Printing (3DP)- 3DP uses AI technology in its procedures. Rapid prototyping technique involves layer-by-layer printing of items using powdered metal or sticky biomaterials based on digital model files generated from CT or MRI data using AI technology. Clinical imaging data are imported into intelligent software, such as Materialise Mimics an image processing software (MIMICS). After picking locations of interest, the program generates a virtual three-dimensional reconstruction for printing using algorithm analysis. During a surgical procedure, internal fixation and cutting for orthotics or tumor excision can pose challenges, including determining the best angle and location for fixation and preserving normal tissue. Through the preoperative detection data, 3DP can produce an individualized surgical guide and a template for assisting the surgery [9].

Conclusion: AI technology has transformed the medical industry, enabling more accurate and efficient patient diagnosis via radiographic, pathological, endoscopic, ultrasonographic, and biochemical investigations while lowering human effort [12]. Improved surgical outcomes resulted in significant improvements to medical treatments throughout the perioperative period, including preoperative preparation, operation, and recovery. Artificial intelligence technology has had a huge influence on medical pharmaceutical manufacture, management, and education, revolutionizing these industries.

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