

# Chapter 11

## Revolutionizing Healthcare Through Robotics and AI Integration: A Comprehensive Approach

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### ABSTRACT

*Artificial Intelligence (AI) is the technology focused on innovating the role of robotics in the healthcare process. The integration of robots in the field of healthcare and medication can effectively recognize, treat, and manage health problems. In traditional healthcare system follows the manual diagnosis methods, manual surgery, pharmacological treatments, and patient monitoring. The drawbacks of traditional methods are lack of accuracy, high cost, limited accessibility, and social barriers.*

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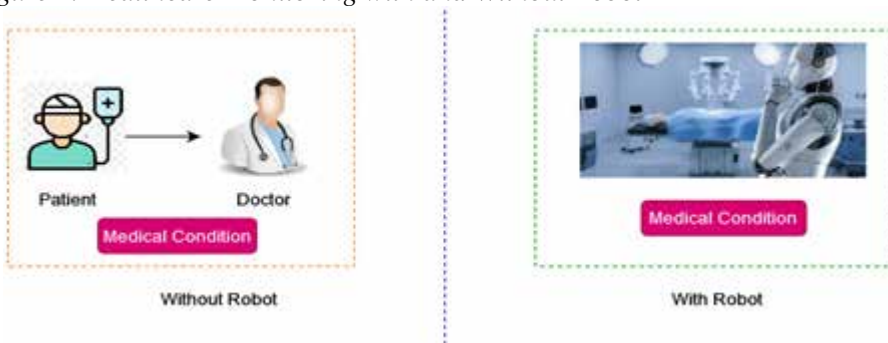
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To overcome these issues this paper provides a detailed review of advanced robotic-assisted surgeries, Remote Patient Monitoring, patient engagement with robotic bonds, and enhancement of patient-centered care. It increases efficiency, decreases cost, and also improves the outcome of medical and healthcare systems. Additionally, it includes the applications, challenges, and possible future impacts on healthcare.

## 1. INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE

Artificial intelligence (AI) is the intelligence of machines that can think like humans. AI is the development and making of computer systems that can do the tasks humans do. It requires human intelligence like learning, Problem-solving, and decision-making. To recognize patterns it can analyze the data, and adapt to new information, facilitating it to improve performance over time. In order to allow computer systems to perform tasks that need human intelligence. It is used in healthcare for different purposes such as diagnosis, treatment planning, and patient care. And then analyze images to diagnose diseases, for example, x-rays or CT scans. AI can detect the disease and its effect by analyzing the image. It can also develop treatment plans for diseases. Additionally, it can monitor patients and their treatments(Padhan et al., 2023). And also identifies which patients are likely to respond to a certain medication and which patients are likely to experience the Side effects of medication. Furthermore, It can monitor the patients remind them to take their medication, and provide information about a disease.

Figure 1. Healthcare Monitoring with and Without Robot



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