Chapter 7
Artificial Intelligence in Medical and Healthcare Service: Applications and Challenges

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ABSTRACT

Artificial intelligence (AI) technologies have made enormous strides recently and are already pervasive in many aspects of our daily life. Numerous efforts are being undertaken in the healthcare industry to apply AI technology for useful medical treatments. With the quick advancements in hardware performance and machine learning algorithms, it is anticipated that AI technology would be crucial in efficiently processing and utilizing vast amounts of health and medical data. However, the AI technology differs from the current medical technology in a number of distinctive ways. There are still few medical professionals and members of the general public that accept AI in healthcare, and there are several challenges about the security and dependability of AI technology applications. This chapter describes the state of current AI research and application in the healthcare industry and identifies the various challenges that need to be addressed and suggest how to resolve them.

INTRODUCTION

When artificial intelligence (AI) first emerged in the United States in 1956, its main purpose is a task of self-learning algorithm created by studying the data that was already available. Following years of

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development, AI has made tremendous development in applications such as medical image processing, medical process optimization, medical education, and other domains. It has gradually become a component of standard medical care (Jiang, 2021). Since AI technology has developed so quickly, a variety of problems have arisen, making it less common in clinical and public health settings. Artificial intelligence technology has advanced significantly recently and is now present in many facets of our daily lives.

The health care sector is making several attempts to integrate Artificial Intelligence technology to treatment patient. There are some notable ways in which AI technology is different from contemporary medical technologies. There are a few gaps in the current system that must be filled in order for AI to be employed in healthcare more regularly and successfully.

Future advancements in healthcare technology are anticipated to result from ongoing improvements in artificial intelligence technologies. As a result, lot of research work is done and researchers already published a significant number of research papers with enormous volumes of health related data by applying various technologies for patient diagnosis and treatment.

Furthermore, most of the researchers demonstrated using Artificial Intelligence in the healthcare industry produces superior results to those obtained using current technologies. Encrypting medical data, forecasting patient history of a disease using multiple sources, and analyzing medical photos with Artificial Intelligence technology to categorize images and apply for therapies are some of the studies being conducted in this area.

In this chapter, we outline the present barriers preventing AI from becoming widely accepted as well as the current use of Artificial Intelligence in medicine (Park, 2020). Chapter first section describes the state of current AI research and application in the healthcare industry and analyzes the problems that require fixing. We also discuss about potential approaches to tackling issues.

CURRENT STATE OF AI IN HEALTHCARE

This section describes the related articles published in a crisp manner.

AI Applications in the Healthcare Industry

These days artificial technology is making new advances since it affects additional psychological areas, including judgment, intelligence and knowledge. World Health Organization (Ziglio, 2004) states that 60% of aspects relating to one's health and quality of life are related to one's habits, including exercise, maintaining a healthy diet, reclining, reducing anxiety, using antidepressants, and socializing.

Automation technology with AI is now able to offer lifestyle modifications including daily affirmations based on the psychological signs of the individuals. Artificial Intelligence based methods are anticipated to radically alter the functioning of medical systems, patient interactions and patient care services in order to enhance the patient outcomes. Along with deep learning technology, Machine learning algorithm's capacity for pattern recognition has increased significantly, and for some tasks, AI technology's capacity for deciphering information patterns has surpassed that of a typical human aptitude.

Artificial Intelligence is being employed in diagnostic imaging and with chronic diseases to create precise and useful products that will help treat the sufferers with illnesses and discover treatment at the earliest stage. The former technology has significant advantages over traditional approaches to healthcare decision-making and analytics. AI algorithms understand training data as they process it, improv-