Chapter 6

Emerging Applications of Artificial Intelligence (AI) and Machine Learning (ML) in Modern Urology

Ranjit Barua

https://orcid.org/0000-0003-2236-3876
Omdayal Group of Institutions, India

Surajit Das
R.G. Kar Medical College and Hospital, India

Jaydeep Mondal
College of Medicine and Sagore Dutta Hospital, India

ABSTRACT

AI (artificial intelligence) and ML (machine learning) are the technical controlling implements for clarifying difficult difficulties in modern urology. AI may also progress in surgical training and exercise due to its computerized performance. Presently, the ML technique has been recognized to be a respectable method to attain difficult configuration recognition and regression analysis dispossessed of a clear need to idea and crack the essential physical prototypes. ML is the best comprehensively applied model because of the great dataset that is currently available, robust computational power, and refined algorithm architecture. AI may also be engaged in progressive strategies. This chapter aims to offer a synopsis of the current state of AI and ML tools in either analysis, conclusion, treatment potentials, or diagnosis consequence estimate in practical urology.

INTRODUCTION

Over the previous time, the interest in AI (Artificial intelligence) and ML (Machine learning) has been increasing exponentially (Hameed et al., 2021) (Beam et al., 2018). ML was well recognized, but the growing power of CPUs and the quantity of data available has delivered the platform for deep learning tools to develop (Datta et al., 2019). Even though the works on the uses of AI technology in the area of modern urology are comparatively bare, its potential uses are numerous particularly in CAD (Computer-Aided Detection) imaging, surgical training, urodynamics, and advanced strategies (Shah et al., 2020). AI discusses the computational proficiency of the device to mimic and execute human reasoning tasks (Datta et al., 2019) (Barua et al., 2022). It is beginning a paradigm move in terms of delivering health care and decision-making for the surgeons. The developments in the modern medical skills used in health care, for example, EMRs (electronic medical records), are providing enormous quantities of data (Beam et al., 2018). This huge quantity of data permits computer-based predictions and results to be made to aid in superior patient care. By 2025, the progress rate of AI applications in modern healthcare is projected to be 29.3%, and worldwide revenue is valued to rise by 40%. With the existing patient data, the upcoming health care method is likely to transfer to AI outpatient clinics and preventive medicine (Suarez-Ibarrola et al., 2020). It offers more accurateness and consistent clinical choices; hereafter, it is probably going to be an essential amount of the health care system (Checcucci et al., 2020). Figure. 1 shows a process flow-chart for structure of an artificial intelligence (AI) model.

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