# Book Review

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**Advanced Introduction to Artificial Intelligence in Healthcare**
**by: Thomas H. Davenport, John Glaser, and Elizabeth Gardner**
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According to Siala and Wang (2022), AI technologies open brand channels in detecting and predicting pandemics and diseases, diagnosing and managing chronic and neurological conditions, interpreting medical scans and radiology images, delivering health services and treatments, drug discovery, and matching suitable patients to clinical trials. With machine learning (ML) and other algorithms, healthcare professionals can perform smart analytical and inferential activities on health data, which leads to effective decision-making in healthcare.

Artificial intelligence (AI) can potentially transform healthcare data into meaningful and actionable insights (Gama et al., 2022). In line with Rubinger et al. (2022), AI and ML are becoming solid foundations in the medical and healthcare-research fields and are integral in our prolonged processing and capitalisation of vigorous patient electronic medical record (EMR) data. Considerations for the use and application of ML in healthcare settings include assessing the quality of data inputs and decision-making that serve as the foundations of the ML model, ensuring the end product is understandable, evident, and ethical concerns are considered throughout the entire development process.

Hype or hope? Chapter 1 illustrates the overall context for AI in healthcare, especially some characteristics of the healthcare industry that impact adoption. The AI product and service market have been reviewed. From bench to bedside: the factors influencing its growth and the pace of AI adoption have been explored. The authors delineate some actions management can take to accelerate AI adoption in their organisation.

In Chapter 2, the authors examine AI technologies such as machine learning and robotic processing automation. The following four major categories of AI applications have been pinpointed: Making processes more efficient; Lowering costs; Enhancing existing products and services; Creating new products and services. Furthermore, the authors go into the potential impact of AI on healthcare industries and factors that will have some bearing on the form and adoption pace of those models.

Chapter 3 depicts several ways that AI is likely to change the approach the medical field diagnose and treats some diseases, which can be classified into several broad

categories: including Interpreting image data; Analysing sound; Mining the genome; Sifting through electronic health record (EHR) and monitoring data; Helping clinicians deal with EHRs; Exploring the path to market; Focusing clinical AI adoption initiatives: centers of excellence, etc.

In Chapter 4, the authors describe AI-based drugs, devices, facilities, and the like, including current and future AI-enabled drug discovery and development; AI-enabled precision medical treatments; Current and future AI-enabled medical devices; current and future AI-enabled environments. The authors notice that healthcare "environments" – both physical and virtual – are gradually evolving to include data, analytics, and AI, like smart exam rooms; smart hospitals; smart ambulances; smart portals and apps.

Chapter 5 focuses on AI and intelligent devices for general health management and chronic conditions, precision behavioural "nudges," and AI for population health. Also, the authors look at some of the issues surrounding the AI-enabled personal health ecosystem, including surmounting possible regulatory considerations, addressing threats to users' privacy, and building patient trust.

In Chapter 6, the authors switch to administering and paying for healthcare with AI. Administrative "pain points" in revenue cycle processes includes estivates of out-of-pocket costs for patients; coding of diseases and treatment; prior authorisations; claims status checking; fraud, wastes, and abuse detection. External administrative relationships and AI have big challenges. Optimising operational decision-making with AI, such as operating rooms, inpatient rooms, and equipment utilisation, has a bright future.

Chapter 7 deals with "The impacts of AI on human healthcare providers". The authors look beyond the hype and clarify how people in healthcare are already being affected, what's likely to happen as adoption increases, and also what's highly unlikely to happen. AI can be treated as a "second set of eyes" rather than as the only clinical observer or decision maker. Most patients prefer human providers. Also, there is a healthcare labour shortage coming whereas there is no shock for unions because most healthcare jobs will not be replaced by AI. With AI, we will witness more prediction and less reaction; more checking and less deciding; more efficiency and less waste; more care and less administration; more complex care and less routine care; more home care and less facility care; more robot touch and less human touch; and more evidence and less guessing.

In Chapter 8, the authors list unusual types and levels of risk that healthcare organisations could encounter, such as algorithm risk (design flaws, bugs, bias, programming errors, poor testing, lack of transparency, etc.), regulatory risk, liability and malpractice risk. These risks should not be either ignored or acted as barriers for healthcare organisations to explore the staggering potential of AI. Once in a while, there exist some intentional or unintentional overpromising and underdelivering of commercial products and services.

Chapter 9 demonstrates how to integrate AI into your organisations. Executives, not just IT technicians, need to understand AI technologies, and how they can be appropriately used to support their organisation's strategy and operation, or towards the opposite to be misused. There are three levels of AI management contexts: Micro, Meso, and Macro. Micro concentrates on evaluating the AI sales pitch. Meso gives attention to integrating AI into a spectrum of operations whereas macro contemplates a data-driven organisation. In terms of organising for AI, governance, innovation management, talent management, data management, and technology architecture should be handled carefully.

I agree with the authors. Yes, there is no shortage of books about AI, or even AI in healthcare, but this book is so special. I am so happy to read through it without a break and enjoy so many sharp analyses. This book is almost a condensed and authoritative encyclopedia for healthcare provider executives. It is exceptionally well written by three highly respected scholars who have published more than 300 papers in top-tier journals and observed milestones of its evolution. It advises healthcare executives on how to effectively leverage AI to advance their strategies to support digital transformation.

As the authors emphasised that AI has the potential to be an exceptionally powerful tool in our collective efforts to transform healthcare. AI applications across a wider range of uses in patient care, care operation, personal health management, and the creation of new health devices and pharmaceuticals. It makes a cutting-edge contribution to the field and is an extremely valuable asset for not only healthcare organisation executives, leaders, IT professionals, doctors, and researchers, but also practitioners, medical graduate students, and alike who are interested in identifying the value generated by AI systems in healthcare and discovering opportunities and challenges.

Notice that the eBook version is priced from £20/$26 from eBook vendors while in print the book can be ordered from the Edward Elgar Publishing website.

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