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How Artificial Intelligence (AI) Is Changing Healthcare and Related Fields

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Abstract

Artificial intelligence (AI) is rapidly transforming healthcare by improving patient experience, advancing population health, lowering costs, and supporting care team well-being. This talk will introduce machine learning (ML) and deep learning (DL) as core components of AI, illustrating how these technologies shift from traditional programming to data-driven learning. Key ML concepts, including supervised and unsupervised learning and classification workflows, will be explored to demonstrate how data is imported, preprocessed, and applied in predictive models. These tools enable AI to support real-world healthcare applications, such as enhancing diagnostic accuracy, personalizing treatments, and improving resource management. Alongside these advancements, ethical and regulatory considerations are essential, as AI's integration into healthcare raises issues of data privacy, fairness in algorithms, and the need for robust regulatory frameworks. These measures are crucial for fostering trust and ensuring equitable access to AI-driven healthcare solutions. Consistent with healthcare's four primary aims—improved patient experience, population health, lower costs, and care team well-being—this shift to data-centric approaches holds meaningful implications across healthcare sub-disciplines, driving a new era of innovation and care delivery.

About:

Professor Dr. Md. Shoaib Bhuiyan is a tenured professor at the Health Data Science Department of Suzuka University of Medical Science, Japan, specializing in data science and health engineering. His research integrates image processing and machine learning for applications in Intelligent Transportation Systems and biomedical sciences. With over 80 peer-reviewed publications and a Japanese patent in intelligent vehicle technology, Professor Bhuiyan has made significant contributions to these fields. He is an active member of IEEE and other professional societies, having chaired sessions at major IEEE conferences and has served on various international technical committees.