

Machine Learning for Healthcare Systems

Foundations and Applications

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This book provides various insights into machine learning techniques in healthcare system data and its analysis. Recent technological advancements in the healthcare system represent cutting-edge innovations and global research successes in performance modelling, analysis, and applications. The extensive use of machine learning in numerous industries, including healthcare, has been made possible by advancements in data technologies, including storage capacity, processing capability, and data transit speeds. The need for a personalized medicine or "precision medicine" approach to healthcare has been highlighted by current trends in medicine due to the complexity of providing effective healthcare to each individual.

Personalized medicine aims to identify, forecast, and analyze diagnostic decisions using vast volumes of healthcare data so that doctors may then apply them to each unique patient. These data may include, but are not limited to, information on a person's genes or family history, medical imaging data, drug combinations, patient health outcomes at the community level, and natural language processing of pre-existing medical documentation.

The introduction of digital technology in the healthcare industry is marked by ongoing difficulties with implementation and use. Slow progress has been made in unifying different healthcare systems, and much of the world still lacks a fully integrated healthcare system. The intrinsic complexity and development of human biology, as well as the differences across patients, have repeatedly demonstrated the significance of the human element in the diagnosis and treatment of illnesses. But as digital technology develops, healthcare providers will undoubtedly need to use it more and more to give patients the best treatment possible.

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