

# Preface

The integration of Machine Learning (ML) and Deep Learning (DL) into smart healthcare systems and implantable devices is revolutionizing the way healthcare is delivered, monitored, and optimized. This book explores the transformative impact of these cutting-edge technologies in medical applications, from early disease detection and personalized treatment plans to real-time health monitoring and predictive diagnostics. With a focus on both theoretical advancements and practical implementations, it delves into how ML and DL are enhancing the functionality and intelligence of wearable devices, implantable sensors, and other smart health technologies. The book aims to provide a comprehensive understanding of the algorithms, models, and systems driving innovations in healthcare, offering valuable insights for researchers, practitioners, and healthcare professionals. It also highlights the ethical, regulatory, and societal considerations of implementing AI in critical healthcare environments, ensuring a balanced perspective on the potential and challenges in this evolving field.