

# Preface

The integration of Machine Learning (ML) and Artificial Intelligence (AI) into implantable pacemaker technology marks a transformative era in intelligent cardiovascular health management. By embedding advanced algorithms into these life-saving devices, real-time monitoring, adaptive therapy, and predictive diagnostics become possible, reshaping how arrhythmias and heart conditions are detected and treated. This work explores the intersection of biomedical engineering and intelligent computation, highlighting innovations that make pacemakers smarter, safer, and more responsive to individual patient needs. As cardiovascular diseases remain a leading global concern, this convergence of AI and implantable technology offers new hope for personalized, data-driven cardiac care.