

Expert Lecture Title:

Revolutionizing Healthcare with Smart Computing

The global healthcare systems are facing unprecedented challenges driven by the rising burden of chronic and infectious diseases, an expanding and aging population, shortages of healthcare professionals, escalating costs, and unequal access to quality medical services, particularly in developing countries. Traditional healthcare systems are no longer sufficient to meet the growing and changing healthcare needs of society.

The convergence of smart computing technologies including Artificial Intelligence (AI), Machine Learning (ML), the Internet of Medical Things (IoMT), Cloud and Edge computing, Big Data Analytics and Robotics is transforming the way healthcare is delivered. Among these, AI and ML have emerged as powerful enablers, capable of analyzing complex medical data such as electronic health records, medical images, genomic information, and data from wearable devices to support early disease detection, accurate diagnosis, personalized treatment, predictive analytics, continuous patient monitoring along with accurate and accelerated drug discovery.

This lecture explores how smart computing is transforming healthcare through the integration of AI and other intelligent technologies to enable predictive, preventive, personalized, and participatory healthcare. It also highlights the need for responsible AI by addressing key challenges such as data privacy, explainability, fairness, and human oversight, while demonstrating how AI can support clinicians, improve patient outcomes, and enhance the efficiency, accessibility, and sustainability of healthcare systems.

Prof. Yogendra Narain Singh (Brief Bio)

Prof. Yogendra Narain Singh is presently serving as the Director of Bharat Ratna Babasaheb Bhimrao Ambedkar Rajkiya Engineering College, Pratapgarh, and is a senior Professor in the Department of Computer Science & Engineering at the Institute of Engineering & Technology (IET), Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow. He graduated in Computer Science & Engineering from Harcourt Butler Technical University (formerly HBTI), Kanpur, and pursued his MTech in Computer Science & Engineering from the Indian Institute of Technology (IIT Kanpur). He obtained his PhD from the Indian Institute of Technology (IIT-BHU), Varanasi.

With over three decades of academic, research and institutional experience, Prof. Singh has made significant contributions to the fields of Artificial Intelligence, Machine Learning, Pattern Recognition, Medical Image Computing and Biometrics. He has authored two books and published more than 70 research papers in reputed international journals and conferences. Prof. Singh is widely recognized for his pioneering research in biometric recognition, particularly for his work on ECG-based biometric recognition. He developed a state-of-the-art biometric recognition system capable of identifying individuals using the unique characteristics of the human ECG signal. His research has contributed significantly to the advancement of secure and unobtrusive biometric identification technologies.

His scholarly contributions have received international recognition. Notably, one of his research papers was selected among the best biometrics-related papers published across Elsevier journals in 2015, reflecting the impact and relevance of his work in the field. In recognition of his distinguished contributions to teaching and academic excellence, Prof. Singh has been honoured with the Best Teacher Award and a Certificate of Appreciation by Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow, in 2022. As an academic leader and institution builder, Prof. Singh is committed to fostering quality education, cutting-edge research, innovation, ethical use of emerging technologies, and holistic development of students.

