12-week Online Certificate Course

AI in
HEALTHCARE

Offered by

▸▸ **International Institute of Information Technology, Hyderabad (IIIT-H)**
▸▸ **National Academy of Medical Sciences (NAMS)**
▸▸ **iHub-Data, IIIT Hyderabad**

Integration of Machine Learning based Artificial Intelligence (AI) in healthcare is transforming the way medical professionals diagnose, treat, and manage patients. Medical experts need to be imparted with necessary skills and understanding to effectively leverage these technologies. This course is designed to equip professionals with the knowledge and tools to understand, evaluate, and apply AI in clinical settings, aimed at enhancing patient care and operational efficiency.

OBJECTIVES

▸ Sensitization, appreciation, and familiarization with applications of AI tools and technologies in healthcare.

▸ Fostering awareness of ethical and governance issues related to AI in medicine.

TARGET GROUP

▸ Faculty, and medical professionals (MD, MS, MCh, DM, MDS).

▸ Postgraduate medical students (MBBS, BDS)

ELIGIBILITY

▸ Basic understanding of healthcare processes and clinical practice.

▸ Curiosity for understanding the impact of modern technology in healthcare.

REGISTRATION PROCESS

▸ Fill out the registration form with personal and professional details.

▸ Submit proof of professional status (e.g., College ID).

▸ Preference will be given to early career faculty.

▸ Selected participants will be required to pay the course fee online.

EXPECTED OUTCOMES

▸ Informed, Aware, and Responsible end-users of AI.

▸ Ability to evaluate, test, and validate AI applications.

▸ Improved ability to critically assess AI research and technologies.

▸ Enhanced ability to work collaboratively on AI projects in healthcare.

Course Contents

Module 1

Introduction to Artificial Intelligence (AI) in Healthcare

- **Clinical Data Sets**: Data sources and types (structured, unstructured); Standards in data acquisition and management; Opportunities and challenges in data handling

- **The Role of Smart and Intelligent Systems in Clinical Workflow**: Computer systems in clinical workflow; traditional systems vs. intelligent systems in healthcare; concepts of intelligence and smartness

- **Recent Inroads / Trends of AI in Healthcare**: Landmark applications in healthcare

Module 2

Basics of Machine Learning (ML)

- **Introduction to AI**: Definition, history, evolution, and applications of AI

- **Learning Paradigms**: Supervised Learning (Classification & regression); Unsupervised Learning (Clustering); Reinforcement Learning

- **The ML Pipeline**: Feature extraction, selection, and dimensionality reduction; Model building, validation, and evaluation metrics

- **Recent Trends in AI**: Generative AI, Foundational Models, ChatGPT

Module 3

Clinical Applications

- **Structure of Case Studies:**
  - **Components:** Clinical presentation and role of AI/ML; Data preparation and feature processing; Model building and evaluation [relevant ML and DL algorithms will be introduced]; Results, inference, and wrap-up

- **Domains (any 4 topics)**:
  - **Screening**: early detection, monitoring, wearables, chatbots
  - **Diagnosis**: staging, grading, subtyping
  - **Prognosis**: survival / risk prediction, treatment outcomes
  - **Treatment Related**: surgery, drug delivery, precise intervention
  - **Patient Management**: recovery, readmission, monitoring (ICU, ER)
  - **Hospital Resource Management**: administration, pharmacy, insurance, fraud

  Cases from the above domains will be discussed in relation to various data types (bio signals, images, tabular, molecular, and textual) and different algorithms (tree-based methods, neural networks, deep neural networks) relevant for specific problems.

Module 4

Ethics and Governance of AI

- Ethical issues, data protection, privacy, anonymity, biases
- Regulations and governance frameworks for software as medical device

Course Delivery and Certification

Lectures: Pre-recorded lectures (~1 hour content delivered as 4 videos each of 15 minutes duration) released every week for participants to enable flexible learning at their convenience.

Contact Sessions: Weekly online contact session (1 hour duration) comprising summary of the lecture material, tutorials on the material covered in the video lectures, Q&A, and live demonstration of case studies.

Demo of AI applications: Demo of simple AI applications relevant to healthcare are taken up during the contact sessions.

Expected study-time per week: 3 hours

Course Assessment: The course videos would also have short quizzes / assignments to complete before the contact session. Post-course assessment to measure learning outcomes.

Certification: Upon satisfactory completion of lectures, contact sessions and assessments, a certificate of course completion will be issued jointly by NAMS and IIIT-H.

Course Fee: Special Introductory Fee of Rs **15,000**/- per candidate.

To proceed with your application, please **click here**

Last date for Application: 10 September 2024 (deadline) | **Payment Link**: (will be sent to shortlisted candidates)

Contact

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