



Basic AICTE ATAL

Faculty Development Programme



Deep Learning for Healthcare Management

Organized by

Department of Electrical Engineering
Indian Institute of Technology Patna,

Bihta, Bihar PIN-801106

Coordinator

Dr. Maheshkumar H Kolekar

Associate Professor, EE Dept, IIT Patna

Co-Coordinator

Dr. Meghana Dutta,

Assistant Professor of Economics, IIT Patna

5th September – 16th September, 2022

About AICTE Training and Learning (ATAL) Academy

The vision of ATAL academy is to empower faculty to achieve goals of Higher Education such as access, equity and quality. Its objectives are;

- To set up an academy which will plan and help in imparting quality technical education in the country.
- To support technical institutions in fostering research, innovation and entrepreneurship through training.
- To stress upon empowering technical teachers & technicians using Information & Communication Technology.
- To provide a variety of opportunities for training and exchange of experiences such as workshops, orientations, mentoring programmes, learning communities, peer and faculty development.

ABOUT IIT PATNA

IIT Patna is an institute of National importance incorporated by an Act of the Indian Parliament in 2008. It is ranked 21st among engineering colleges in India by the National Institutional Ranking framework in 2021. IIT Patna's campus is located at Bihta, 35 km from Patna and 20 km from Ara, at a 501 acres site. The nearest railway station is Bihta, 2 km from the campus. IIT Patna has good road connectivity to and from Patna and Ara. The nearest airport to reach IIT Patna campus is Jai Prakash Narayan Domestic Airport, Patna, which is located 5 km southwest of Patna.

ABOUT FDP

Mankind witnessed a bottleneck of healthcare infrastructure during ongoing pandemic COVID-19. World is moving towards a multifold technological advancement in all disciplines of engineering and science. The modern sedentary lifestyle, consumption of fat rich and processed food, the ongoing environmental pollution, etc. have led to healthcare issues among almost everybody in the world. Moreover, the standard of living of public is increasing which demands more practitioners as well as highly sophisticated modalities. It is very much inevitable to apply and develop diagnostics using computational algorithms. To handle today's challenges computational models such as deep learning is being implemented for healthcare management. This FDP provides a

unique platform for multi-disciplinary knowledge exploration, amalgamation and augmentation of engineering with clinical science. This FDP helps the faculty to integrate the concepts of deep learning and healthcare to cater the needs of students in pursuit of their urge for knowledge.

The proposed coursework will give the participants an overall idea of present status of applications of deep learning for healthcare management. Participants will get opportunity to interact with experts from IITs, DRDO, AIIMS Patna, CSIR, CDAC Patna and hospitals such as IGIMS Patna. Also visit to hospital AIIMS Patna and CDAC Patna will be organized.

OBJECTIVE OF THE FDP

- ❖ To provide an in-depth knowledge with practical applications through theoretical session blended with hands-on experiments.
- ❖ To enhance the skills of faculties to make them well equipped with the current state-of-the-art technologies.
- ❖ To provide thorough application oriented and problem-based learning with real life examples.
- ❖ To equip the faculty to make utmost competent to capture the knowledge urge of modern-day students.

FDP COURSE CONTENTS

The course will cover the basic concepts of deep learning in healthcare. Various applications of biomedical signals in different field such as cognitive assessment, brain computer interfacing will be discussed. Application of biomedical signal in disease prognosis and diagnosis will be explained with results. The course includes technical discussion on basic signal processing techniques for signal de-noising, time/ frequency domain analysis such as wavelet transformation. A session on practical biomedical signal acquisition and software-based analysis will be conducted. Medical doctors/ practitioners from AIIMS Patna, PARAS hospital, Indira Gandhi Institute of Medical Science Patna are also invited to deliver talk and share their experiences. Also visit to AIIMS Patna and CDAC Patna will be arranged to see state-of-the-art healthcare technologies.

OUTCOME

By the end of the program the participants should learn concepts through hands-on:

- Understand the concepts and importance of various features in computational Data Science.
- Appreciate the need of structured data and preprocessing steps in feature engineering.
- Have a profound understanding of deep learning and challenges in classification and segmentation.
- Analyze the relative importance of deep learning efficient performance in Data Science.

- Interpret and apply dimensionality reduction techniques on large dataset and select appropriate feature.
- Evaluate the state-of-the-art deep learning models through hands-on.
- Apply the pre-processing techniques and deep learning models on real world data.
- Study applications of deep learning models in the healthcare.
- Develop the motivation for further studies and research in these domains.

ORGANIZING COMMITTEE

PATRON

Prof. T N Singh, Director, IIT Patna

COORDINATOR

Dr. Maheshkumar H Kolekar, Associate Professor, EE, IIT Patna

CO-COORDINATOR

Dr. Meghna Dutta, Assistant Professor of Economics, IIT Patna

FIELD VISITS

AIIMS PATNA, CDAC PATNA, INCUBATION CENTER
IIT PATNA

EXPERTS/SPEAKERS

Eminent faculties/ scientists from IITs, DRDO, CSIR, NITs, IIITs, AIIMS Patna, PARAS Hospital Patna, IGIMS Patna, reputed Universities, hospitals and industry experts. Tentative list of speakers is as follows:

- Mr Aditya Kumar Sinha, Director, CDAC Patna
- Dr. Ranjan Kumar Behera, IIT Patna
- Dr Abhishek Raj, IIT Patna
- Prof Aurobinda Routray, IIT Kharagpur
- Prof Ramakrishnan S, IIT Madras, Chennai
- Dr Jyotsna Agrawal, NIMHANS Bangalore
- Dr Kamlesh Jha, AIIMS, Patna

- Dr Sushil Chandra, INMAS, DRDO, New Delhi
- Dr. Maheshkumar H Kolekar, IIT Patna
- Dr. Meghna Dutta, IIT Patna
- Prof Vikram Gadre, IIT Bombay, Mumbai

ELIGIBILITY AND REGISTRATION

- No Registration Fee.
- Assistant Professor/ Associate Professors/ PhD scholars/ PG students.
- 30/50 participants from HEIs from the same city/within 100 km of host institute.
- Participants have to register through ATAL portal (<https://atalacademy.aicte-india.org/login>)

Address for Communication

Dr Maheshkumar H Kolekar, Associate Professor,
Electrical Engineering Department, IIT Patna,
Bihta-801103
mahesh@iitp.ac.in
8986184240

How to Register?

There are no registration charges to attend the program. i.e. it is FREE for selected participants.

Interested participants can register using the following link: <https://atalacademy.aicte-india.org/signup>

Step 1. One can Register themselves with an email id (sign up). If one have already registered, then login.

Step 2. Click on Workshops FDPs.

Step 3. Search by state “Bihar” and Month “June” from above dropdown box.

Step 4. Click the RED plus sign button to register.

Step 5. A short notification “successfully course registered” appears.

Step 6. One can also check their registration by clicking on the Applied Workshops (after done successfully registration)

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Registration Form

Name:

Designation:

Department:

Institute Name:

Correspondence Address

.....

.....PIN Code

Mobile No.:

E-Mail Id:

Category: *Academic/ Industry/Others*

Participant’s Signature