



ONLINE FACULTY DEVELOPMENT PROGRAMS-II (FDI*)

Deep Learning and Machine Learning in Biomedical Signal Processing

(23rd August 2021 – 3rd September 2021)

Organized by E & ICT Academy, National Institute of Technology, Warangal.

In association with Department of Electronics and Communication Engineering, G. Narayanamma Institute of Technology and Science (for Women) (AUTONOMOUS), Shaikpet, Hyderabad

and G. Pulla Reddy Engineering College (AUTONOMOUS), Warangal (Sponsored by Ministry of Electronics and Information Technology (MeitY), GOI)

Preamble:

"Electronics & ICT Academy" was set up at NIT Warangal with financial assistance from MeitY, Govt. The jurisdiction of this academy is Telangana, Andhra Pradesh, Karnataka, Goa, Puducherry and Andaman & Nicobar Islands. The academy aims to offer faculty development programmes in standardised courses and emerging areas of Electronics, Information Communication Technologies, training & consultancy services for industry, research & development for industry, CEP for working professionals, Advice and support for technical education and entrepreneurial activities.

About the Workshop:

Healthcare occupies an indispensable part in human lives. The healthcare industry contains large amount of psychiatric data hence machine learning models were used to provide conclusion effectively in the disease prediction. Clinical data from electronic medical records, registries or trials provide a large source of information to apply machine learning methods in order to foster precision medicine. Even though there is a growing interest in the application of machine learning (ML) techniques to address clinical problems, the use of deep-learning in healthcare have just gained attention recently.

Major Course Contents:

- The prediction of spread of COVID-19 using Regression Models
Breast cancer analysis using logistic regression
Data Clustering Algorithms: k-means and K nearest Neighbor Algorithms
SVM Algorithms in predicting the outbreak of cardiovascular diseases in patients on dialysis
Blood Diseases Detection using Classical Machine Learning Algorithms
Introduction to Deep Learning, Deep Neural Networks
Foundations of Convolutional Neural Networks Object Detection
Recurrent Neural Networks
Deep neural network medical image segmentation
Linear Algorithms and Optimizations
Deep Convolutional Models

Faculty conducting this programme:

The programme will be conducted in online mode by the faculty members from NIT Warangal, Academicians of GNITS, Government field from IITs/IITMs are invited to deliver lectures in the programme. Speakers from industries are also expected to deliver part of the course.

Eligibility:

The programme is open to faculty of Engineering Colleges, MCA Colleges and other allied disciplines in India. Industry personnel working in the concerned field discipline can also attend.

Registration Fee Particulars:

- Faculty & Research scholars: Rs. 7500/-
Industry Participants: Rs. 22500/-

The fee shall be paid by online transfer using the following details: Please write "DLMLDM" in remarks or purpose while doing online payment transaction

Bank details for Online Transfer:

- Account Name: Electronics & ICT Academy, NITW
Account No: 62423775918
IFSC: SBIN0028149
Bank and Branch: State Bank of India, NIT(REC) Warangal

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(AUTONOMOUS)

Shaikpet, Hyderabad - 500 104

How to apply:

A filled in form of application in the prescribed format (refer to page 2 of this brochure for format) and the printout of the same can be used to fill, duly signed and sponsored by appropriate authorities should reach the coordinator by email since the confirmation of selection will be intimated only through mail.

Coordinator Mail ID: DLMLDM@nitwarangal.ac.in

Selection Criteria:

Selection will be done based on first-come-first-serve basis to a maximum number of 100. Additionally 50 participants from industry are allowed to participate. The list of selected participants will be intimated through email. In case a candidate is not selected, the registration fee amount will be refunded. Short listed Candidates will be issued certificates on successful completion of the course. Reservations are followed for selecting candidates as per GOI norms.

Important Dates:

Table with 2 columns: Event, Date. Last date (Registration and fee payment): 20th August, 2021. Selection List by E-mail: 21st August, 2021. Duration: 23rd August - 3rd September, 2021.

About NIT Warangal:

National Institute of Technology, Warangal is the first among 17 RECs set up as part venture of the Government of India and the state government. Over the years the college has established itself as a premier institute imparting technical education of a very high standard leading to the B.Tech degrees in various branches of engineering, M.Tech. and Ph.D programs in various specializations. All B. Tech and M. Tech programmes of NIT Warangal are NBA accredited.

About GNITS:

G. Narayanamma Institute of Technology & Science, a leading Engineering college in Hyderabad for Women, was founded by late Sri G. Pulla Reddy guru in 1997, with an objective of providing excellent learning facilities for Women to pursue education in Engineering since two decades. The aim is to promote Technical Education among Women to enhance and build up a new generation of thinkers, innovators and planners in the realms of Science and Technology. GNITS received UGC autonomous status for 10 years from 2016 and is affiliated to JNTU/H. It is approved by AICTE, accredited by NAAC & NBA (AICTE) and ISO 9001:2015 certified Institution.

About ECE department of GNITS:

The department of ECE was started in the year 1997 with an intake of 60 students. The intake was increased to 180 students. The department also offers PG course in DECE with an intake of 18. The department has applied for 5 patents, published 4 books, R&D equipment costing 3.57 crores and received 43 funds totaling from AICTE by carrying out the projects to its credit. It has 8 Ph.D. dissertations in diversified fields of electronics & 17 faculty Pursuing Ph.D. from IITs/IITMs with assistance in IITs/Top class MNCs/Public sector/Foreign universities.

About GPREC:

G. Pulla Reddy Engineering College is the branch of late Sri G. Pulla Reddy guru, the renowned philanthropist, and a great humanist, established in 1984-85. It is one of the earliest private engineering colleges in Andhra Pradesh. The trust was instituted by late Sri G. Pulla Reddy Guru in the year 1977 with the motto of rendering service to the society. The College has been approved by AICTE and affiliated to JNTU/H. Anantapuramu and accredited with Autonomous Status by the UGC. New Delhi Accredited by NAAC Grade(A+) of UGC & NBA of AICTE and Awarded 196 by NIRF-2020. Recognized as Minor Institution by AICTE under Merit Based Scheme.

About the ECE Department of GPREC:

The ECE dept. was established in the academic year 1984-85 with an intake of 40 and currently with 180 regular and 18 lateral entry students. The department also offers PG Programme in VLSI and Embedded Systems with an intake of 10. The department is recognized as a research centre by JNTU, Anantapuramu and offers full time Ph.D programme. It has a strong faculty with 14 Ph.D's & 17 faculty Pursuing Ph.D.

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Deep Learning and Machine Learning in Biomedical Signal Processing
(27th August 2023 - 29th September 2023)

Organized by
F-4 ICT Academy, National Institute of Technology, Warangal
in association with
Department of Electronics and Information Engineering
G. Marayamma Institute of Technology and Science (for Women)
(AUTONOMOUS), Shaikpet, Hyderabad

and
G. Palla Reddy Engineering College (for Women) Kurnool
(Approved by Ministry of Education and Information Technology (MHRD), Govt)

Schedule with Resource Persons

Day	10:30 - 11 AM	Session 1 11-1 PM	Session 2 2-4 PM
23-08-2023 Day 1	Registration	Introduction to Machine Learning and Bio-Medical Signal Processing Dr. J Ravi Kumar, NITW	EEEG Filtering using IIR and FIRS Dr. J Ravi Kumar, NITW
24-08-2023 Day 2	Introduction to Linear Regression using Least Square and Gradient Descent methods Dr. J Ravi Kumar, NITW	Lunch Break	Introduction to Python Programming NIT Warangal Mr. M Vijay Kumar NIT Warangal
25-08-2023 Day 3	Introduction to Python Programming Mr. A. B. Akash NIT Warangal		Predicting COVID-19 cases using Logistic regression Mr. A. B. Akash NIT Warangal
26-08-2023 Day 4	Pre Processing of EEG data Dr. V. Sankarsh Kumar, Assoc. Prof., ECE, SVKIT Hyderabad for women	PRINCIPAL G. Marayamma Institute of Technology & Science (for women) Shaikpet, Hyderabad - 500 104	Predicting COVID-19 cases using Logistic regression using SVM Mr. M. Vijay Kumar, NIT Warangal NIT Warangal

27-08-2023	Topics: Regression and Linear Logistic Regression Dr. J Ravi Kumar, NIT Warangal	Hand on Session on Logistic Regression and Binary Class Classification Mr. M Vijay Kumar, Mr. A.B. Akash, NITW	
28-08-2023	Introduction to Neural Networks and Back Propagation Dr. J Ravi Kumar, NIT Warangal	Application of Artificial Neural Networks in Cardiovascular Disease Prediction Mr. A.B. Akash NIT Warangal	
31-08-2023	Introduction to Convolutional Neural Networks Dr. J Ravi Kumar, NITW	Implementation of CNN using Keras and Tensor Flow Mr. A.B. Akash NIT Warangal	
01-09-2023	Recursive Neural Networks and applications Dr. Kadambari, CSE, NITW	Applications of Recurrent Neural Networks Dr. Kadambari, CSE, NITW	
02-09-2023	From 1.5 PM Deep Generative Models Dr. Anugraha Das, DR Krishna		
03-09-2023	Introduction to Keras clustering Algorithms by Dr. J Ravi Kumar, Assoc. Prof., ECE, NITW	From 1 to 1PM Introduction to Keras clustering Algorithms - Hands on session by Mr. M Vijay Kumar, NITW	From 1 to 1.30PM Quiz conducted, Feedback from Participants Calculator From 1.30 to 4PM

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ELECTRONICS & ICT ACADEMY
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL, (T.S.), INDIA
 and

G. Narayanamma Institute of Technology and Science (for Women)(Autonomous),Hyderabad,T.S.,
 G. Pulla Reddy Engineering College(Autonomous), Kurnool,A.P.

Participation Certificate

This is to certify that **PARUPALLI SRIPADMA**, Assistant Professor
 from **G NARAYANAMMA INSTITUTE OF TECHNOLOGY & SCIENCE (for Women) (AUTONOMOUS)**, Shaikpet, Hyderabad has
 participated in a 40-hour Online Faculty Development Programme on "Deep Learning and Machine
 Learning in Biomedical Signal Processing" Sponsored by Ministry of Electronics and Information
 Technology (MeitY) GoI, organised by E&ICT Academy, NIT Warangal and Department of Electronics and Communication
 Engineering, G. Narayanamma Institute of Technology and Science (for Women) (Autonomous), Hyderabad, T.S.,
 G. Pulla Reddy Engineering College (Autonomous) Kurnool, A.P. during 23rd August - 3rd September, 2021.
 She / He has successfully completed all the requirements for the completion of the programme.

Mrs. Sarada Aavula Coordinator GNITS, Hyderabad	Dr. G. Amjad Khan Coordinator GPREC, Kurnool	Dr. Ravi Kumar Jatoth Coordinator NIT, Warangal	Dr. K. Ramesh Reddy Principal GNITS, Hyderabad	Dr. B. Sreenivasa Reddy Principal GPREC, Kurnool	Prof. R. B. V. Subramaanyam Chief Investigator E&ICT Academy, NIT Warangal	Prof. N. V. Ramana Rao Director NIT, Warangal

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Department: Electronics and Communication Engineering
2021-22
REPORT

FDP on “Deep learning and Machine learning in Biomedical signal processing”
Date of program: 23-08-2021-3-9-2021

Resource person: Dr.Ravi Kumar, Santosh Kumar

About the Program:

The FDP was inaugurated on 23rd Aug 2021 followed by first session by Dr.Ravi Kumar, Assoc.Prof, ECE Dept, NITW.

On the second day of the FDP, FN session was by Dr.Ravi Kumar, Assoc.Prof, ECE Dept, NITW on Introduction to linear regression followed by a hands on session in the afternoon.

Third day was a complete hands on session on regression models.

Fourth day of the FDP FN session was Preprocessing of EEG data by Santosh Kumar, Assoc.Prof, BVRIT.

Fifth was a session by Dr.RaviKumar on logistic regression followed by hands on session.

6th day was a session on Introdcution to neural networks by Dr.Ravi Kumar followed by application of neural network in cardiac disease detection by B.Ahadit

7th and 8th days had sessions on recurrent neural netowrks followed by valedictory.

The overall experience of attending the workshop is quite helpful in a better understanding on Neural network, concept on machine learning and how to can be applied to Biomedical signal Processing.

Signature of the Faculty member

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