

Faculty Development Programme

on

“ANN & Deep Learning”

11th – 15th June 2018

under

**Ministry of Electronics & Information Technology (MeitY)
Government of India**

Government of India Initiative for Employability Enhancement

Organized at

Department of Computer Science and Engineering

**Shri Ramdeobaba College of Engineering and Management,
Nagpur (State: Maharashtra), India**



ABOUT THE FACULTY DEVELOPMENT PROGRAMME

Shri Ramdeobaba College of Engineering and Management [RCOEM], Nagpur, is one of the Nodal centres for conduction of Faculty Development Programmes in core areas of Electronics and Information & Communication Technology (ICT) streams that have been planned by Electronics and ICT Academies at 07 (seven) institutions viz. IIT Guwahati, IIT Kanpur, NIT Warangal, NIT Patna and IIITDM Jabalpur and IIT Roorkee, MNIT Jaipur for delivery during Summer (i.e., May - June 2018). All these summer courses will be offered through National Knowledge Network (NKN) by inviting experts from IITs, NITs, IIITs and other premier institutes/industries.

Brief information about all the Academies is available at : <http://Meity.gov.in/content/scheme-financial-assistance-setting-electronics-andict-academies>

ABOUT THE INSTITUTE

RCOEM, an autonomous institution permanently affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, an ISO 9001:2008 certified institution. NAAC accredited with 'A' grade was established in 1984 by Shri Ramdeobaba Sarvajanic Samiti (SRSS), a trust which has been involved in community service for over four decades. More than 30 years of existence has helped RCOEM grow deep roots and establish a strong foundation in technical education.

The Department of Computer Science & Engineering aims to continually improve the education environment, in order to develop graduates with strong academic and technical background, needed to achieve distinction in the discipline. The Department has good interaction with Software industries, Government organization and Private Sectors around the region.

Institute web-site: <http://www.rk nec.edu>

COURSE NAME: ANN & Deep Learning

PROPOSED DATE: 11th - 15th June 2018

Principal Coordinating – Academy: IIITDM Jabalpur

Co-principal Coordinating – Academy: NIT Warangal

Target Beneficiaries: Interested Faculty of engineering/technical institutions is eligible to attend the Faculty Development Programme

Number of seats at each offering Academy: 20

Course Duration: Each summer course is designed for 40 hours (Theory Lectures: 20-25 hours, Hands-on/Design-oriented/activity linked/Problem Solving/Case Studies sessions/Quiz Tests: 15-20 hours)

REGISTRATION PROCEDURE

No Registration fee is charged for attending this programme planned at any designated academies/Remote centers. However, candidate should **submit a refundable Demand Draft of Rs.1000/-** along with **application** and the same will be handed over to participant on the last day of the training. Satisfactory Certificate will be given subject to fulfillment of attending all sessions, submission of assignments and clearing the tests.

Candidates could apply for training at academy locations or identified centers as per the convenience. For details about identified centers, please refer to respective academy websites.

Last Date for Submission of Applications and Intimation of Selection:

IMPORTANT DATES	
Last Date for Submission of Application form	28 th May 2018
Selection list Intimation by E-mail/Display in web site	4 th June 2018

Accommodation

Boarding and Lodging at Hostels/Guest House will be provided at free of cost only at Identified E & ICT Academies. For details refer respective Academy websites. At other identified Remote centers only working lunch and snacks will be provided

Travel

No Travel Allowance will be paid to the participants.

How to apply:

- A duly filled in application form in the prescribed form signed by the Head of the Institute to which candidate belongs (along with demand draft) **should reach by post to the local coordinator*** of the **participating academy.**
- Government of India norms will be followed for SC/ST category participants.
- The application form along with DD can also be submitted in the online mode to Local Coordinator of the **respective academy.**

*Postal Address of Local Coordinator:

Coordinator, FDP on ANN and Deep Learning

Department of Computer Science & Engineering
Shri Ramdeobaba College of Engineering and Management,
Ramdeo Tekdi, Gittikhadan,
Katol Road, Nagpur - 440 013 (M.S.) (India)

MODE OF PAYMENT:

Academy Payment through DD Name	Payment through DD [interested candidates must pay to ANY ONE of the following Academies only]
IIITDM Jabalpur	Demand Draft in favor of "Electronics and ICT Academy, IIITDMJ" payable at Jabalpur AND Submit Demand Draft to stated postal address*
NIT Warangal	Demand Draft in favor of "Electronics and ICT Academy, NITW" payable at NIT Warangal AND Submit Demand Draft to stated postal address*

Module details of ANN and Deep Learning:

(Offered during 11th - 15th June 2018)

S. No.	Module Name	Topics
1.	Artificial Neural Networks (ANNs)	Brief introduction and history of Artificial Neural Networks (ANN), Biological inspiration, Perceptrons, Types of NN architectures, Supervised learning using neural networks (NNs), Forward and backward propagation. Multilayer perceptron (MLP), Back propagation training for MLP, Computation graph, Logistic regression gradient descent, Stochastic gradient descent. Factors affecting back propagation training, Applications to some practical classification problems. Hands on: Demonstration on implementation of Shallow and Deep architecture, introduction to Python and Tensorflow, Brief introduction to Python and Numpy.
2.	Deep Learning	Deep Feed forward Networks - Example: Learning XOR, Gradient-Based Learning, Hidden Units. Regularization for Deep Learning – Parameter Norm Penalties, Norm Penalties as Constrained Optimization, Regularization, Dataset Augmentation, Early Stopping, Parameter Tying and Parameter Sharing, Sparse Representations, Dropout regularization Hands on: Building the first NN step by step, programming exercises on Back propagation,
3.	Optimization for Training Deep Models	How Learning Differs from Pure Optimization, Challenges in Neural Network Optimization, Basic Algorithms, Hyperparameter tuning, Minibatch gradient descent, RMSProp and Adam optimization Hands on: Hyper parameter tuning and regularization practice, Minibatch gradient descent, Adam optimization.
4.	Convolutional Networks	The Convolution Operation, Motivation, Pooling, Basic architecture of a Convolution Neural Network, Variants of the Basic Convolution Model, Evolution of Convolution NN Architectures - AlexNet, ResNet. Hands on: Convolution neural network application using Tensorflow, building an application for object detection, face recognition.
5.	Sequence Modeling	Recurrent and Recursive Nets - Unfolding Computational Graphs, Recurrent Neural Networks, Bidirectional RNNs, Encoder – Decoder Sequence-to-Sequence Architectures, The Challenge of Long-Term Dependencies, The Long Short-Term Memory and Other Gated RNNs. Lab: Program demonstration for applications in POS Tagging, Named Entity Recognition and language modeling, Machine Translation.

Coordinators at the Host Institute [RCOEM, Nagpur]

Dr. Shailendra Aote

Asst. Prof., CSE Dept., RCOEM, Nagpur

Contact details: +91-9096896565

Prof. Neha Tirpude

Asst. Prof., CSE Dept., RCOEM, Nagpur