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A CATEGORY INSTITUTION

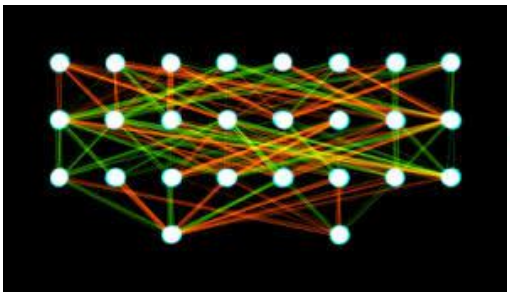
21 Years of Excellence

FACULTY DEVELOPMENT PROGRAMME

ON

"WORKSHOP ON NEURAL NETWORKS AND ITS IMPLEMENTATION WITH MATLAB"

15th & 16th September, 2017 (Friday & Saturday)



Institute of Professional Excellence & Management

(ISO 9001:2008 Certified, NAAC Accredited & Ph.D. Research Centre of the University)

INTRODUCTION

An Artificial Neural Network (ANN) is an information processing paradigm that is inspired by the way biological nervous systems, such as the brain, process information. The key element of this paradigm is the novel structure of the information processing system. It is composed of a large number of highly interconnected processing elements (neurons) working in unison to solve specific problems. ANNs, like people, learn by example. An ANN is configured for a specific application, such as pattern recognition or data classification, through a learning process. Learning in biological systems involves adjustments to the synaptic connections that exist between the neurons.

The MATLAB platform is optimized for solving engineering and scientific problems. The matrix-based MATLAB language is the world's most natural way to express computational mathematics. Built-in graphics make it easy to visualize and gain insights from data. A vast library of prebuilt toolboxes lets you get started right away with algorithms essential to your domain. The desktop environment invites experimentation, exploration, and discovery. These MATLAB tools and capabilities are all rigorously tested and designed to work together.

MATLAB helps you take your ideas beyond the desktop. You can run your analyses on larger data sets and scale up to clusters and clouds. MATLAB code can be integrated with other languages, enabling you to deploy algorithms and applications within web, enterprise, and production systems.

OBJECTIVES

In the present context, very few educators are conversant with the application of automated tools to be applied in computational research.

The purpose of these FDPs is:

- To acquaint them with the mathematical tool available for research and their application, exposing the participants to contemporary research methodology;
- To provide them with hands on approach to conduct research,
- Depth in Knowledge regarding Application of MATLAB.

The FDP will also enrich the Knowledge of participants on Research Paper Writing skills.

PROGRAMME SCHEDULE

Day 1 Pre Lunch Session: (Theoretical concepts and mathematical formulation) 15th September, 2017

- Introduction of neural network and its modeling.
- Different models of artificial neural network, topologies and basic learning laws.
- Hebbian supervised and unsupervised learning for pattern association.

- Perceptron learning rule for pattern classification.

Day 1 Post Lunch: (Practical with MATLAB and hands on practice with MATLAB)

- Exposure with MATLAB environment, its common functions.
- Programming for modeling of neural networks, Perceptron learning and Hebbian learning.
- Work with neural network toolbox for Perceptron model.

Day 2 Pre Lunch Session: (Theoretical Concepts, mathematical formulation and working with MATLAB) 16th September, 2017

- Feed forward neural network architecture and generalize pattern classification.
- Pattern mapping, pattern mapping network, function approximation and Back propagation learning rule.
- Discussion of Back propagation learning rule and its characteristics with its limitations and enchantments.
- Implementation for feed forward neural network in MATLAB environment through command window and programming using in built functions for pattern classification, pattern mapping, generalization, approximation and predication.
- Implementation for feed forward neural network in MATLAB environment through Neural network toolbox using in built functions for pattern classification, pattern mapping, generalization, approximation and predication.

Day 2 Post Lunch Session: (Theoretical Concepts, mathematical formulation and working with MATLAB)

- Feedback neural network, associative memory, Hopfield neural network & its energy functions analysis.
- Pattern storage and recalling in Hopfield neural networks, concept of stability, global minimum and false minima problem.
- MATLAB implementation for Hopfield model through programming and command window.
- Implementation of competitive learning in MATLAB for pattern clustering.

KEY RESOURCE PERSON

Dr. Manu Pratap Singh

Professor
Department of computer science
Dr B.R Ambedkar University
Agra (U.P.)

Who Should Attend

Participants:

Research scholars of computer engineering/science, faculty members Engineering & Computer Science & Application, practitioners/professionals and students.

Registration Fee:

For Professionals/Corporate/Academicians -Rs 2000/- per candidate

For Research Scholar & Students – Rs 1500/- each candidate

Last date for Registration: 12th September 2017

Mode of Payment: Cash/ Cheque/Demand Draft in favour of **"IPEM, Ghaziabad"** payable at Ghaziabad, Mail duly filled up Registration Form on: **workshop@ipemgzb.ac.in**

Organizing Committee

Patron

Mr. Anupam Goel

Advisors

- Mr. V.K. Arya
- Dr. Kishore Kumar
- Dr. M.P. Singh
- Col. (Dr.) A.S. Malhotra
- Dr. Sugandha Goel

Convener

Prof.(Dr.) R.P.S. Tomar
Director IT
9910491473
rpstomar@ipemgzb.ac.in

Ms. Meenu Kakkar
Assistant Professor
9999169662
meenu.kakkar@ipemgzb.ac.in

ABOUT INSTITUTE & IT PROGRAMME

IPEM made a modest beginning in the year 1996, with few Management and Computer Application Programmes. Today the IPEM Group of Institutions are in the forefront of imparting knowledge in the fields of Education, Law, Management and Information Technology.

The Computer & IT Department was started in 1996 with Bachelor of Computer (BCA), affiliated to the Chaudhary Charan Singh University, Meerut. From 2001 the institute introduced the Master in Computer Application(MCA) with 60 seats. This journey of Computer & IT Dept. is going on successfully with excellence in both academics and administration. At Computer & IT Department students are exposed to emerging trends in the areas of Information Technology by value additions through Workshops, Live Projects and a regular interaction with Experts from Industry. This is reflected in the performance of the students as we have 100% result with maximum 1st division. We provide best placement to the students.

The Computer & IT Department is running two courses successfully: Master of Computer Application (MCA) is approved by all India Council for Technical Education (AICTE) and affiliated to Dr. A.P.J. Abdul Kalam Technical University (AKTU) Lucknow and Bachelor of Computer Application (BCA) is affiliated to the Chaudhary Charan Singh University, Meerut