NEURAL NETWORKS
(ELECTIVE II)

Course Code: 15IT2114

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Course Outcomes: At the end of the course, a student will be able to
CO1: Identify Neural Network Models and their characteristics.
CO2: Discuss Neural Network pattern recognition tasks.
CO3: Describe feed-forward and feedback Neural Networks.
CO4: Analyze feed-forward and feedback Neural Networks.
CO5: Discuss the applications of Artificial Neural Networks.

UNIT- 1 (10-Lectures)

Basics of artificial neural networks: Characteristics of neural networks, Historical development of neural network, artificial neural networks: terminology, models of neurons, topology, basic learning laws.

Activation and synaptic dynamics: Activation Dynamics models, Synaptic Dynamics models, learning methods, stability and convergence, recall in neural networks.

UNIT –II (10-Lectures)

Functional units of ANN for pattern recognition tasks: Pattern Recognition Problems, basic functional units, Pattern Recognition tasks by the functional units

UNIT –III (10-Lectures)

Feed forward neural networks: Analysis of pattern association networks, Analysis of pattern classification networks, Analysis of pattern mapping networks.

Feedback neural networks: Analysis of linear auto associative FF Networks, Analysis of pattern storage networks, Stochastic Networks and Simulated Annealing, Boltzmann Machine.

UNIT –IV (10-Lectures)

Competitive learning neural networks: Components of competitive learning networks, analysis of feedback layer for different output functions, analysis of pattern clustering networks, analysis of feature mapping networks

UNIT- V (10-Lectures)

Architectures for complex pattern recognition tasks: Associative memory, pattern mapping, stability-plasticity dilemma: ART, Temporal patterns, Pattern Variability: Neocognition

Applications of ANN: Direct Applications, Application Area.

TEXT BOOKS:

1. B. Yegnanarayana, *"Artificial Neural Networks",* 1st Edition, Prentice Hall, 2009

REFERENCES:

1. Satish Kumar, *"Neural Networks – A Classroom Approach*", 2nd Edition, Tata McGraw-Hill, 2004.
2. C.M.Bishop, *"Pattern Recognition and Machine Learning",* 1st Edition, Springer, 2006.

WEB REFERENCE:

www.nd.com/nnreference.html