RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Electrical & Electronics Engineering, VIII-Semester

Departmental Elective EX- 802 (D) Application of AI in Electrical/Electronics Engg.

Unit 1:
Introduction-Models of Neural Network – Architectures – Knowledge representation – Artificial Intelligence and Neural networks – Learning process – Error correction learning – Hebbian learning – Competitive learning – Boltzman learning – Supervised learning – Unsupervised learning – Reinforcement learning – learning tasks.

Unit 2:
Multi – layer perceptron using Back propagation Algorithm-Self – organizing Map – Radial Basis Function Network – Functional link, network – Hopfield Network.

Unit 3:
Introduction – Fuzzy versus crisp – Fuzzy sets – Membership function – Basic Fuzzy set operations – Properties of Fuzzy sets – Fuzzy cartesian Product – Operations on Fuzzy relations – Fuzzy logic – Fuzzy Quantifiers – Fuzzy Inference – Fuzzy Rule based system – Defuzzification methods

Unit 4:
Introduction-Encoding – Fitness Function-Reproduction operators – Genetic Modeling – Genetic operators – Crossover – Single–site crossover – Two-point crossover – Multi point crossover-Uniform crossover – Matrix crossover – Crossover Rate – Inversion & Deletion – Mutation operator –Mutation – Mutation Rate-Bit-wise operators – Generational cycle-convergence of Genetic Algorithm.

Unit 5:
Load forecasting – Load flow studies – Economic load dispatch – Load frequency control – Single area system and two area system – Small Signal Stability (Dynamic stability) Reactive power control – speed control of DC and AC Motors.

Reference Book:

S. Rajasekaran and G. A. V. Pai, "Neural Networks, Fuzzy Logic & Genetic Algorithms"-PHI, New Delhi, 2003:
P. D. Wasserman, Van Nostrand Reinhold, "Neural Computing Theory & Practice" – New York, 1989.

Bart Kosko, "Neural Network & Fuzzy System" Prentice Hall, 1992.

G. J. Klir and T. A. Folger, "Fuzzy sets, Uncertainty and Information"-PHI, Pvt.Ltd,1994.

D. E. Goldberg," Genetic Algorithms"- Addison Wesley 1999