

PRINCIPLES OF SOFT COMPUTING (3-0-0)

Module - I (12 Hrs.)

Introduction to Soft Computing, Artificial Neural Network(ANN) : Fundamentals of ANN, Basic Models of an artificial Neuron, Neural Network Architecture, Learning methods, Terminologies of ANN, Hebb network, Supervised Learning Networks: Perceptron, MLP, Architecture of a Back propagation Network : back propagation, Learning Effect of Tuning parameters of the Back propagation, Adaline, Madaline, RBF Network, Associative memory: Auto, hetero and linear associative memory, network, Adaptive Resonance Theory

ART1, ART2, Applications

Module –II (12 Hrs)

FUZZY LOGIC

Fuzzy set theory: crisp sets, fuzzy sets, crisp relations, fuzzy relations, Fuzzy Systems: Crisp logic predicate logic, fuzzy logic, fuzzy Rule based system, Defuzzification Methods, Fuzzy rule based reasoning

GENETIC ALGORITHMS

Fundamentals of genetic algorithms: Encoding, Fitness functions, Reproduction. Genetic Modeling :

Cross over, Inversion and deletion, Mutation operator, Bit-wise operators, Bitwise operators used in GA. Convergence of Genetic algorithm. Applications , Real life Problems.

Module – III (6 Hrs.)

Hybrid Soft Computing Techniques Hybrid system, neural Networks, fuzzy logic and Genetic algorithms hybrids. Genetic Algorithm based Back propagation Networks: GA based weight determination applications: Fuzzy logic controlled genetic Algorithms soft computing tools, Applications.

Text Book :

Principles of Soft Computing- S.N.Sivanandan and S.N.Deepa, Wiley India, 2nd Edition,2011

Reference Book :

1. Neuro Fuzzy and Soft Computing, J. S. R. JANG, C.T. Sun, E. Mizutani, PHI
2. Neural Networks, Fuzzy Logic, and Genetic Algorithm (synthesis and Application) S.Rajasekaran, G.A. Vijayalakshmi Pai, PHI