Subject Code : RCCN3K10

CORE COURSE X - SOFT COMPUTING

Unit I: ARTIFICIAL NEURAL NETWORKS

Basic concepts - Single layer perception - Multilayer Perception - Supervised and Unsupervised learning – Back propagation networks - Kohnen's self organizing networks - Hopfield network.

Unit II: FUZZY SYSTEMS

Fuzzy sets and Fuzzy reasoning - Fuzzy matrices - Fuzzy functions - Decomposition - Fuzzy automata and languages - Fuzzy control methods - Fuzzy decision making.

Unit III: NEURO - FUZZY MODELING

Adaptive networks based Fuzzy interface systems - Classification and Regression Trees - Data clustering algorithms - Rule based structure identification - Neuro-Fuzzy controls - Simulated annealing – Evolutionary computation

Unit IV: GENETIC ALGORITHMS

Survival of the Fittest - Fitness Computations - Cross over - Mutation - Reproduction - Rank method - Rank space method.

Unit V: SOFTCOMPUTING AND CONVENTIONAL AI

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AI search algorithm - Predicate calculus - Rules of interference - Semantic networks - Frames - Objects - Hybrid models - Applications

Text Books:

1. Jang J.S.R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Prentice Hall 1998.
2. Timothy J.Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill, 1997.
3. Laurene Fausett, "Fundamentals of Neural Networks", Prentice Hall, 1994.
4. D.E . Goldberg, "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y, 1989.