



CS-514

SOFT COMPUTING

UNIT-I

Introduction to Soft Computing and Neural Networks:

Evolution of Computing Soft Computing Constituents From Conventional AI to Computational Intelligence-Machine Learning Basics.

UNIT II

Genetic Algorithms:

Introduction to Genetic Algorithms (GA) –Applications of GA in Machine Learning-Machine Learning Approach to Knowledge Acquisition.

UNIT III

Neural networks:

Machine Learning Using Neural Network, Adaptive Networks –Feed forward Networks –Supervised Learning Neural Networks–Radial Basis Function Networks-Reinforcement Learning–Unsupervised Learning Neural Networks–Adaptive Resonance architectures – Advances in Neural networks.

UNIT IV

Fuzzy Logic:

Fuzzy Sets –Operations on Fuzzy Sets –Fuzzy Relations –Membership Functions-Fuzzy Rules and Fuzzy Reasoning –Fuzzy Inference Systems –Fuzzy Expert Systems –Fuzzy Decision Making.

UNIT V

Neuro-Fuzzy Modeling:

Adaptive neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification and Regression Trees – Data Clustering Algorithms – Rule base Structure Identification – Neuro-Fuzzy Control – Case studies.

Suggested Reading:

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, “*Neuro-Fuzzy and Soft Computing*”, Prentice-Hall of India, 2003.
2. George J. Klir and Bo Yuan, “*Fuzzy Sets and Fuzzy Logic-Theory and Applications*”, Prentice Hall, 1995.
3. James A. Freeman and David M. Skapura, “*Neural Networks Algorithms, Applications, and Programming Techniques*”, Pearson Edn., 2003.

4. Mitchell Melanie, *“An Introduction to Genetic Algorithm”*, Prentice Hall, 1998.

5. David E. Goldberg, *“Genetic Algorithms in Search, Optimization and Machine Learning”*, Addison Wesley, 1997.

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