

IV Year B.Tech. CSE II - Semester

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CS432 GENETIC ALGORITHMS (ELECTIVE VI)

Course Description & Objectives:

To explore applications & algorithms with Genetics and to understand optimization techniques of Genetic Algorithms

Course Outcomes:

- Able to develop classifier systems with Genetic Algorithms
- Able to optimize the coding and understand functions of Genetic Algorithms

UNIT I - Introduction to Genetic Algorithms

What are Genetic Algorithms, Traditional Optimization and Search Methods, Goals of Optimization, Difference methods Genetic Algorithms & Traditional Methods, Simple Genetic Algorithm.

UNIT II - Mathematical Foundations

Fundamental Theorem, Schema Processing, Two armed & K armed Bandit Problem, Building Blocks Hypothesis, Minimal Deceptive Problem

UNIT III - Implementation of Genetic Algorithm

Data Structures, Reproduction, Crossover and Mutation, Fitness Scaling, Coding, Mapped and Fixed Point Coding, Discretization, Constraints, De Jong and Function Optimization, Improvements & Application of Genetic Algorithms.

UNIT IV - Advanced Operators & Techniques

Dominance, Diploidy, Inversion and Re ordering Techniques, Niche and Speciation, Multi objective Optimization, Knowledge based Techniques, Genetic Algorithms & Parallel Processors.

UNIT V - Introduction to Genetics Based Machine Learning

Classifier, Rule and Message System, Simple classifier system and Applications of Genetics based Machine Learning.

Text Books:

David E Goldberg, "Genetic Algorithms in Search, Optimization & Machine Learning", Pearson Edition, 2009

Reference Books:

1. David A Coley, "An Introduction to Genetic Algorithms for Scientists and Engineers" World Scientific Publishers
2. M Mitchell, "An Introduction to Genetic Algorithms", MIT Press