Annexure-III

CA 829 FOUNDATIONS OF COMPUTER APPLICATIONS RESEARCH

Probability, Statistics and Estimation: Random experiments, Sample sp
Axioms of probability, Conditional probability: Bayes' Theorem. Independ
events. Probabilistic models: standard discrete, continuous models and Ma
models. Minimum Mean Square Estimation (MMSE), Maximum Likelih
Estimation (MLE), linear and interval estimation. Tests of Significance, ANO

Heuristics and meta-heuristics optimization techniques: Local Searc
Meta Heuristics : Simulated Annealing (SA), Tabu Search (TS); Evolution
Algorithm : Genetic Algorithm (GA). Ant Colony Optimization (ACO), Part
Swarm Optimization (PSO), Neural Network (NN); Fuzzy Systems (FS), Ro
Sets (RS).

Graph Algorithms: Definitions and Representation, Minimum Spanning Tr
Prim's Algorithm, Single-Source Shortest Paths: Dijkstra's Algorithm, All-Pa
Shortest Paths, Transitive Closure, Vertex Covering , Vertex Coloring
Randomized Algorithms

Data Analysis and Data Analytics: General Linear Regression Mod
Estimation for β, Error Estimation, Residual Analysis. Discriminant Analys
Two group problem, the k-group problem, multiple groups, Interpretation
Multiple group Discriminant Analysis solutions. Clustering and Classificati
Techniques. Principal Component Analysis. Factor Analysis.

Tools and Technologies: MATLAB, WEKA, SPSS/SAS TOOLS, NS/2, Web 2
- Study and application to the individual scholar's field of research.

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