

CHAPTER 34

MATHEMATICAL SCIENCES OPERATIONAL RESEARCH

Doctoral Theses

284. GUPTA (Deepali)
Some Optimization Problems in Software Reliability.
Supervisors : Prof. P. K. Kapur and Dr. P. C. Jha
Th 16497

Abstract

Endeavors to apply techniques of Operational Research viz. Mathematical Modeling and Optimization Techniques in the field of Software Reliability. Some Software Reliability Growth Models are proposed. Formulated and solved some optimization problems related to Software Release Time and Optimal Allocation of the available Resources.

Contents

1. Introduction. 2. Software release time optimization problems. 3. Software release time decision problems under fuzzy environment. 4. Identification of different stages in the testing phase of a SRGM and its application. 5. Resource allocation optimization problems for modular software.

285. KAUSAR (Amrina)
Influence of Marketing Policies and Trade Credit on Inventory Decisions.
Supervisor : Dr. Chandra K. Jaggi
Th 16498

Abstract

Presents inventory models with different marketing and trade credit policies under various realistic situations like price-dependent demand rate, deterioration, media influenced demand, credit-linked demand etc.

1. Introduction. 2. Integrated inventory model for deteriorating items with price sensitive demand under supplier's credit. 3. Retailer's optimal ordering and pricing policy under two-stage trade credit with credit-linked demand. 4. Joint optimization of price and cycle length under two-state credit policy with credit linked demand. 5. Marketing oriented EPQ models for deteriorating items. 6. Conclusion and directions for future research. Bibliography.
286. SHARMA (Vikas Kumar)
Reliability Optimization of Complex Systems : Ant Colony algorithms.
 Supervisor : Prof. Manju Lata Agarwal
 Th 16499

Abstract

Described development and validation of ACO meta-heuristic algorithms for the solution of constrained reliability optimization problems that are faced in real life engineering system. In particular, applications to the case of general BSS and series-parallel MSS are demonstrated. The problems analyzed are mono-objective (reliability maximization or cost minimization) type with linear/nonlinear and separable/non-separable system level constraints. The multi-state behavior of the MSS under consideration results from the availability of multiple-choice components for each subsystem. An ACO implementation is created specially for the cost minimization problem in heterogeneous MSS employing capacitated multi-state components. The MSS reliability computation is based on binomial/multinomial probability law. In order to validate the performance efficiency of the proposed algorithms, the currently existing methods, general heuristics and meta-heuristics (GA and TS) tailored to the same problem are used as benchmarks. The goal of the proposed algorithms is to generate optimal / near-optimal solution quickly. To implement the algorithms, C++ codes are written and executed on a machine with the Pentium-IV 2.0 (pr 2.4) GHz CPU and 256 (or 1024) MB RAM. Borlan C++ 5.02 compiler installed on a Windows XP is used to run the programs.

Contents

1. Introduction to Reliability Optimization. 2. An ant colony

optimization algorithm for binary-state complex systems. 3. An ant colony optimization algorithm for homogeneous multi-state series-parallel systems with capacitated binary components. 4. Ant colony optimization algorithms for heterogeneous multi-state series-parallel systems with capacitated binary components. 5. An ant colony optimization algorithm for heterogeneous multi-state series-parallel systems with capacitated multi-state components. Bibliography.

M.Phil Dissertations

287. AGARWAL (Shweta)
Study of Integrated Single-Vendor Single-Buyer Inventory Models in Two Stages Supply Chain.
 Supervisor : Dr. K. K. Aggarwal
288. BHAYANA (Nidhi)
Study of Data Envelopment Analysis (DEA) and its Applications to Market Services.
 Supervisor : Dr. P. C. Jha
289. CHHATWAL (Divya)
Study of Modeling Approaches in Financial Management.
 Supervisor : Dr. K. K. Aggarwal
290. GARG (Kiran)
Study of Vendor -Buyer Coordination in Supply Chain.
 Supervisor : Dr. P. C. Jha
291. GOEL (Varun)
Unified Approach for Developing Software Reliability Growth Models.
 Supervisor : Dr. P. K. Kapur
292. GURJEET KAUR
Testing - Effort Based Software Reliability Growth and Some Related Optimization Problems.
 Supervisors : Prof. P. K. Kapur and Dr. Anu Gupta Aggarwal
293. HEMANT KUMAR
Testing - Coverage Based Software Reliability Growth Modelling.
 Supervisors : Prof. P. K. Kapur and Dr. Anu Gupta Aggarwal

294. JAIN (Pankaj Kumar)
Study of Contingent Claims Valuation Models.
Supervisor : Dr. K. K. Aggarwal
295. JAIN (Priyanka)
Support Vector Machine and it's Application to Clustering.
Supervisor : Dr. P. C. Jha
296. KAPOOR (Kanica)
Applications of Genetic Algorithms in Software Reliability.
Supervisors : Prof. P. K. Kapur and Dr. Anu Gupta Aggarwal
297. KAPOOR (Priyanka)
Study of Option Pricing Models.
Supervisor : Dr. K. K. Aggarwal
298. KAVITA
Study of Allocation of Testing - Resources Among Software Modules in Software Reliability.
Supervisor : Dr. P. C. Jha