

## CHAPTER 29

### MATHEMATICAL SCIENCES OPERATIONAL RESEARCH

#### Doctoral Theses

266. ANJANA  
**Some Contributions to Vector Optimization Problems and Applications to Decision Support Systems.**  
Supervisor : Prof. Davinder Bhatia  
Th 15804

#### *Abstract*

It is on conceptualizing various solution concepts for vector optimization problems with some applications to the specific problems of decision support. The vector optimization problems are studied in finite dimensional frame-work. It also characterize the strict local efficient solution of order  $m$  in terms of the vector saddle point.

#### *Contents*

1. Introduction. 2. Higher order efficiency, saddle point optimality, and duality for vector optimization problems. 3. Characterization strict efficiency for convex multiobjectives programming problems. 4. Approximate convexity in vector optimization. 5. Nonconvex vector minimization with set inclusion constraint. 6. Assigning voter-areas to polling stations. 7. Decision support for comparative evaluation of used cars. 8. Bibliography.

267. VIR BAHADUR SINGH  
**Study on Software Reliability Growth Modeling Using Change-Point and Fault Dependency.**  
Supervisor : Prof. P. K. Kapur  
Th 15760

#### *Abstract*

Endeavors to develop more practical software reliability growth models catering to different development environment.

Software reliability growth models incorporating change-point using Ito type stochastic differential equations have been proposed. The proposed models capture the irregular fluctuation in the fault detection rate. The goodness of the fit analysis has been done on real software failure data sets. The results obtained show better fit and wider applicability of the model to different types of failure data sets.

*Contents*

1. Introduction. 2. Reliability Growth modelling using fault dependency during software testing. 3. Testing effort control and multiple change-point in software reliability. 4. Determining fault types and errors of different severity in software reliability growth modelling. 5. Effect of change-point in software reliability growth modeling using Stochastic differential equations. 6. Conclusion. 7. Bibliography.

## M.Phil Dissertations

268. AGGARWAL (Anchal)  
**Software Reliability Growth Modeling for Distributed Environment.**  
 Supervisor : Prof. P. K. Kapur
269. ANUPAMA CHANDA  
**On Marketing Models for Diffusion of Technological Innovations.**  
 Supervisor : Dr. Amit Kumar Bardhan
270. BHATTACHERJEE (Anirban)  
**Optimization Models for the Vendor Selection in a Supply Chain.**  
 Supervisor : Dr. Pankaj Gupta
271. GANDHI (Kanika)  
**Optimization and Modeling for Fault Tolerant System in Software Reliability.**  
 Supervisor : Dr. P. C. Jha
272. GUPTA (Sheetal)  
**Arcwise Connected Functions and Mathematical Programming.**  
 Supervisor : Prof. Davinder Bhatia

273. HAIDER ALI  
**On Augmented Lagrangian Functions and Zero Duality Gaps.**  
Supervisor : Prof. Davinder Bhatia
274. JAIN (Ravi)  
**On Some Topics in Fuzzy Mathematical Programming and Goal Programming.**  
Supervisor : Prof. Davinder Bhatia
275. JUNEJA (Geetanjali)  
**Optimization Problems in Software Reliability (Allocation and Control)**  
Supervisor : Prof. P. K. Kapur
276. MANGTANI (Archana)  
**Software Reliability Growth Modeling with Imperfect Debugging.**  
Supervisor : Prof. P. K. Kapur
277. NAGAR (Sapna)  
**On Sum and Product of Linear and Linear Fractional Functions.**  
Supervisor : Prof. Davinder Bhatia
278. NIJHAWAN (Nidhi)  
**Study in Release Time Problems.**  
Supervisor : Prof. P. K. Kapur
279. SINGHAL (Neetu)  
**Using Debugging Lag Functions and Error Dependency in Software Reliability Growth Modeling.**  
Supervisor : Prof. P. K. Kapur
280. TAYAL (Rekha)  
**Study for Potential Applications of Operational Research in Service Marketing.**  
Supervisor : Dr. Amit Kumar Bardhan
281. THOMAS (Maria)  
**Convexity and Generalized Convexity in Non-Smooth Optimization.**  
Supervisor : Prof. Davinder Bhatia