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Preface

P. K. Kapur[1]

I am delighted to bring out this special issue of Journal of Life Cycle Reliability and Safety Engineering. This issue contains selected invited/presented papers during the Joint International Conference on Interdisciplinary Research and 8th International Conference on Quality, Reliability, Infocom Technology and Business Operations (JIR-ICQRIT2017), held on 8–10 February 2017 at Amity University, Noida, India, by various experts in the field.

This issue covers various areas of importance such as Software Reliability, Software Release problems, Software Multi Upgradations, Multi Criteria Decision Making, Intervened Decision Systems and Vulnerability Discovery Modeling. The papers provide a glimpse of the state of art in the subject. I am grateful to various authors who have made significant contributions to the field of Reliability Engineering and could present their papers in the (JIRICQRIT2017).

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This special issue comprises eight papers.

The first paper entitled "Reliability Analysis for Multi-Release Open Source Software Systems with Change Point and Exponentiated-Weibull Fault Reduction Factor" by Prof. Anu G. Aggarwal and her co-authors. The authors propose software reliability growth model (SRGM) for successive releases that includes time-variant FRF, effect of change point and error generation during fault removal phenomena.

The second paper entitled "On Statistical Models for Predicting Software Quality/Reliability—Generalized Linear and Linear Mixed Modeling" by Prof. Shinji Inoue and his co-authors. The authors highlight the statistical prediction approaches by applying the generalized linear and linear mixed modeling.

The third paper entitled "User-Dependent Vulnerability Discovery Model and Its Interdisciplinary Nature" by Yogita Kansal and her co-authors. The authors propose vulnerability discovery model that examines the vulnerability discovery rate on the basis of potential users of commercial software and discusses its interdisciplinary nature.

The fourth paper entitled "Open Source Software Cost Analysis with Fault Severity Levels Based on Stochastic Differential Equation Models" by Prof. Yoshinobu Tamura and his co-author. The authors propose a new approach to software reliability assessment based on the stochastic differential equation models considering the noise.

The fifth paper entitled "Measuring and Evaluating Data distribution strategies using an integrated approach of Fuzzy based MOORA and AHP" by Viral Gupta and his co-authors. The authors present a framework for measuring and selecting the most suitable data distribution strategy using an integrated approach of Fuzzy based Multi-

Objective optimization on the basis of ratio analysis (MOORA) and Analytic Hierarchy Process (AHP).

The sixth paper entitled "Release and Testing Stop Time of a Software Using Multi Attribute Utility Theory" by Rana Majumdar and his co-authors. The authors propose a framework for optimal scheduling policy by considering cost and reliability as two attributes using multi-attribute utility theory (MAUT).

The seventh paper entitled "Prioritizing Software Vulnerability Types using Multi Criteria Decision Making Techniques" by Ritu Sibal and her co-authors. The authors focus on vulnerability prioritization on the multi-criteria decision making (MCDM) techniques.

The eighth paper entitled "Two-Stage Weighted Intervened Decision Systems" by Prof. Hoang Pham and his co-author. The authors deal with the reliability and cost evaluation of a type of weighted voting systems under supervision. They also presented the decision behavior of humans on the basis of intervened decision system.

Interdisciplinary research allows us to answer complex questions, address broad issues, explore disciplinary and professional relations, solve problems that are beyond the scope of any one discipline, achieve unity of knowledge. The papers by Viral Gupta et al. and Yogita Kansal et al. and Ritu Sibbal et al. come directly under this important field of current research.

I am also grateful to Prof. Varde for inviting me to bring out a special issue of Journal of Life Cycle Reliability and Safety Engineering. I am grateful to several reviewers for their comments and suggestions which helped in improving the quality of the papers in this special issue. I hope that this issue will prove to be a great success with the academia, researchers and engineers in the areas of Interdisciplinary Research in Engineering, Management and Technology besides Quality, Reliability, IT and Business Operations.

P. K. Kapur is Director, Amity Center for Interdisciplinary Research, Amity University, Noida and Former Dean of the Faculty of Mathematical Sciences and Former Head of the Department of Operational Research, University of Delhi. He has supervised 40 PhD's and 25 M.Phil dissertations in the areas of Innovation Diffusion in Marketing, Software Reliability, Reliability based optimization, and Multi Criteria Decision Making (MCDM) as a tool for interdisciplinary research in Human Resource Development (HRD), Marketing of Brands, Big data projects adoption and other areas of management.

He is the author of two world renowned books "Software Reliability Assessment with O.R. Applications", Springer UK (2011) and "Contributions to Hardware and Software Reliability", (1999), World scientific, Singapore. He has executed various research projects from UGC, DRDO in the field of Mathematical Modeling in Marketing and Software Reliability. He has been the President of Society for Reliability Engineering, Quality and Operations Management (Regd.) since 2000 and former President of Operational Research Society of India. He is the Editor-in-Chief of International Journal of Systems Assurance Engineering and Management (IJSAEM) published by Springer. He has edited 5 volumes of Conference Proceedings published by leading publishers of India and has been the Guest Editor for special issues of IJRQSE (USA), IJSAEM (Springer India), CDQM (Serbia), International Journal of Modeling and Optimization (Singapore), OPSEARCH (India), International Journal of Performability Engineering (India). He obtained his Ph.D. degree in Reliability Theory (Operational Research) from University of Delhi in 1977. He has published extensively in Indian journals and abroad in the areas of Marketing, MCDM, Hardware Reliability, Optimization, Queuing Theory and Maintenance and Software Reliability (more than 300 papers).

He has also been Technical Chair of several IEEEs International Conferences and has been awarded with B-School Excellence awards 2012 as "Best Teacher in Operations Management" by Bloomberg and UTV.

He has delivered several key-note addresses/invited talks in various prestigious Conferences/Universities/Management Institutes across the globe. Has been awarded with Lifetime Achievement Award for Global Leadership and Pioneering contributions to the field of Software Reliability Engineering, Operations Research and as an Author in the 5th International Conference on Quality, Reliability and Information Technology, held at Kathmandu, Nepal 2011 along with an Award "For His Dedicated Contributions to the development DQM Research Center" by Research Center of Dependability and Quality Management (DQM Research Center), Prijevor, Serbia, June 2014.