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17TH ISSAT INTERNATIONAL CONFERENCE ON
RELIABILITY and QUALITY in DESIGN
VANCOUVER B.C., CANADA ★ AUGUST 4 – 6, 2011

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9:30 am - 11:30 am

SESSION 1

Accelerated Life Testing & Probabilistic Modeling
Chair: Elsayed A. Elsayed (Rutgers University, USA)

Oxidation Assisted Fatigue Crack Growth Model and Its
Probabilistic Analysis
Zhigang Wei (Tenneco Inc., USA)
Fulun Yang (Tenneco Inc., USA)
Henry Cheng (Tenneco Inc., USA)

Modeling Analysis and Accelerated Life Testings of Two
Directional Switch for Power Systems
Sung-Min Kim (Korea Testing Laboratory, Korea)
Jung-Won Park (Korea Testing Laboratory, Korea)
Kwang-Min Lee (Korea Testing Laboratory, Korea)
Seung-Hee Choi (S&D Powernics, Korea)

Multimodal Statistical Analysis: Dominant Mode Model
D. Gary Harlow (Lehigh University, USA)

A Novel Approach to Design for 3R-abilities
Chun-Che Huang (National Chi Nan University, Taiwan)
Horng-Fu Chuang (Da-Yeh University, Taiwan)
*Wen-Yau Liang (National Changhua University of Education,
Taiwan)*
Zih-Yu Chang (National Chi Nan University, Taiwan)

Optimal Design of Accelerated Life Testing Plans under
Progressive Censoring
Yada Zhu (IBM Thomas J. Watson Research Center, USA)
Elsayed A. Elsayed (Rutgers University, USA)

SESSION 2

System Reliability Modeling & Analysis
Chair: B.S Dhillon (University of Ottawa, Canada)

Reliability of Systems with Identically Distributed Correlated
Components
Lance Fiondella (University of Connecticut, USA)
Panlop Zeephongsekul (RMIT University, Australia)

An Imperfect Preventive Maintenance Model for Dependent
Competing Risk Systems
Yaping Wang (Rutgers University, USA)
Hoang Pham (Rutgers University, USA)

Effects of Operation Profile onto Sequential System Reliability
*Miroslav Koucky (Technical University of Liberec, Czech
Republic)*
David Valis (University of Defence, Czech Republic)
Zdenek Vintr (University of Defence, Czech Republic)

The Optimization Design and Dynamic Stiffness Analysis
on Front Sub-frame of Passenger Car
*Songlin Zheng (University of Shanghai for Science
and Technology, China)*
*Jinzhi Feng (University of Shanghai for Science and
Technology, China)*

*Yi Lu (University of Shanghai for Science and
Technology, China)*
*Han Gu (University of Shanghai for Science and
Technology, China)*
*Jiangtao Song (University of Shanghai for Science and
Technology, China)*

Medical Equipment Reliability: A Review, Analysis Methods
and Improvement Strategies
B.S Dhillon (University of Ottawa, Canada)

1:00 pm - 3:00 pm

SESSION 3

Statistical Quality Engineering in Design
Chair: Gordon J. Savage (University of Waterloo, Canada)

Economic Statistical Design of EWMA $\bar{X}$ Control Charts
with Time-varying Limits using Taguchiís Loss Function
Wen-Chih Chiu (Aletheia University, Taiwan)
Shin-Li Lu (Aletheia University, Taiwan)

Multiresponse Optimization under Adverse Variance
Conditions: Applications using a Desirability-based Method
Nuno Costa (UNIDEMI/DEMI, Portugal)
Joao Lourenco (INESC-ID, Portugal)
Zulema Lopes Pereira (UNIDEMI/DEMI, Portugal)

Some Aspects of Sequential Systems Design
*Miroslav Koucky (Technical University of Liberec,
Czech Republic)*
David Valis (University of Defence, Czech Republic)

On the Basis of the Equilibrium and Equivalency E^2 Linear
Data Analysis Method
Zhigang Wei (Tenneco Inc., USA)
Fulun Yang (Tenneco Inc., USA)
Henry Cheng (Tenneco Inc., USA)

Probabilistic Design Methodology of Static Systems
Using Metamodels
Turuna S. Seecharan (University of Waterloo, Canada)
Gordon J. Savage (University of Waterloo, Canada)

SESSION 4

Reliability & Maintenance Modeling and Optimization
Chair: Dong-Ho Park (Hallym University, Korea)

Risk-Based Adaptive Maintenance Modeling of Stochastically
Deteriorating Systems
Lin Tan (National University of Defense Technology, China)
Bo Guo (National University of Defense Technology, China)
Shiyu Gong (National University of Defense Technology, China)

Best, Random, and Worst Case of SDP Method in Reliability
Formula of Weighted-k-out-of-n System
Yoichi Higashiyama (Ehime University, Japan)
Ventsi Rumchev (Curtin University of Technology, Australia)

Remaining Useful Life Estimation based on Probabilistic Model
Khanh Le Son (Universite de Technologie de Troyes, France)
Anne Barros (Universite de Technologie de Troyes, France)
Mitra Fouladirad (Universite de Technologie de Troyes, France)
Eric Levrat (Universite Henri Poincare - Nancy I, France)
Benoit Iung (Universite Henri Poincare - Nancy I, France)

Research on the Fatigue Life Reliability Analysis Method of Crawler Crane Platform
Jia Li (Northeastern University, China)
Xiuqian Zhang (Northeastern University, China)

Non-Renewing Replacement-Repair Warranty and Maintenance Policy
Ki Mun Jung (Kyungsung University, Korea)
Dong-Ho Park (Hallym University, Korea)

3:00 pm - 3:15 pm   Coffee Break

3:15 pm - 5:15 pm

SESSION 5

Risk & Failure Analysis
Chair: Shengbin (Burt) Lin (Tenneco Inc., USA)

Crack Propagation Simulation in Spur Gear Tooth Root using ANSYS
Fuqiong Zhao (Concordia University, Canada)
Zhigang Tian (Concordia University, Canada)

Fuzzy Based PC-FMECA Analysis Method
Dongxu Nie (Northeast University, China)
Xuehong He (Northeast University, China)
Zhili Sun (Northeast University, China)

A New Holistic Approach in Using Petri Nets for Risk and Reliability Analysis
Ondrej Nyvlt (Czech Technical University in Prague, Czech Republic)
Lukas Ferkl (Czech Technical University in Prague, Czech Republic)

Weibull Method Application in Exhaust Component Reliability and Durability Life Prediction
Fulun Yang (Tenneco Inc., USA)
Henry Cheng (Tenneco Inc., USA)

An Accident Risk-based Approach for Hazmat Transportation Decision Making
Shahrzad Faghih Roohi (National University of Singapore, Singapore)
Min Xie (National University of Singapore, Singapore)
Kien Ming Ng (National University of Singapore, Singapore)

SESSION 6

Software Reliability Modeling and Its Application
Chair: Shinji Inoue *(Tottori University, Japan)*

Stochastic Performability Evaluation for Software System based on NHPP Reliability Model
Tatsuya Nagata (Tottori University, Japan)
Koichi Tokuno (Tottori University, Japan)
Shigeru Yamada (Tottori University, Japan)

NHPP Models for Software Reliability Measurement with Change-Point
Yuka Minamino (Tottori University, Japan)
Shinji Inoue (Tottori University, Japan)
Shigeru Yamada (Tottori University, Japan)

A Method of Reliability Assessment based on Stochastic Differential Equation Model Considering Combination Status for a Large-Scale Open Source Solution
Yoshinobu Tamura (Yamaguchi University, Japan)
Shigeru Yamada (Tottori University, Japan)

A Method of Reliability Assessment based on MCMC Considering the Fault Importance Levels for an Open Source Software
Masaru Kawakami (Tottori University, Japan)
Yoshinobu Tamura (Yamaguchi University, Japan)
Shigeru Yamada (Tottori University, Japan)

A Software Reliability Modeling Framework with Multiple Change-Points
Shinji Inoue (Tottori University, Japan)
Shigeru Yamada (Tottori University, Japan)

5:30 pm - 7:00 pm   Welcome Reception

8:30 am - 10:00 am

SESSION 7

Performance Analysis and Quality Management
Chair: Chau-Chen Torgn (National Yunlin University of Science & Technology, Taiwan)

Research Regarding the Effect of Smaller Class Size on the Educational Quality Management of Elementary Schools in Taiwan
Ming-Tsai Hsu (Chung-Hua University, Taiwan)
Chin-Hsin Chiu (Chung-Hua University, Taiwan)
Hsuan-Yi Chen (Chung-Hua University, Taiwan)
Li-Hsing Ho (Chung-Hua University, Taiwan)

Introduce a RFID Medicine Dispensing System and Its Performance Measures
Tai-Fu Yang (Tungnan University, Taiwan)
Shien-Chii Shieh (Tungnan University, Taiwan)

Comparative Study on the Influence of Face-to-face and Web-based Instruction on College Students' Body Physique Satisfaction, Physical Self-concept, and Exercise Attitude
Che-Jen Chuang (Vannung University, Taiwan)
Cheng-Wen Liao (Vannung University, Taiwan)
Hsiang-Lei Yin (Vannung University, Taiwan)

A Study of Enterprise Digital Assistant Development by Integration of KANO Model and Quality Function Deployment
Chau-Chen Torng (National Yunlin University of Science & Technology, Taiwan)
Jey J.C. Wu (National Yunlin University of Science & Technology, Taiwan)

SESSION 8

Robust Design & Optimization
Chair: D. Gary Harlow (Lehigh University, USA)

Robust Design of a Dynamic Actuator System for a Guided Projectile
Jang-Hee Ryu (Andong National University, Korea)
In-Sang Choi (Hanwha Corporation, Korea)
Joo-Sung Kim (Hanwha Corporation, Korea)
Kyung-Sik Yoon (Hanwha Corporation, Korea)
Young Kap Son (Andong National University, Korea)

Modified Optimum Profit Model for Product Under the Single Stage Screening Procedure
Chung-Ho Chen (Southern Taiwan University, Taiwan)

An Improved Method for Estimating the Parameters of the Two-Parameter Cauchy Distribution
Zhenmin Chen (Florida International University, USA)
Andi Zhu (Florida International University, USA)

An Experimental Design to Optimize the Fiber Diameters of Electrospun Nanofibrous Membranes
Shih-Jung Liu (Chang Gung University, Taiwan)
Lung-Yi Chiou (Chang Gung University, Taiwan)
Chun-Yi Liaw (Chang Gung University, Taiwan)

10:00 am - 10:15 am Coffee Break

10:15 am - 11:45 am

SESSION 9

Optimal Maintenance Modeling
Chair: Takashi Satow (Tottori University, Japan)

Comparative Analysis on Optimal Maintenance Policies for Markovian Deteriorating Systems under Uncertain Repair
Nobuyuki Tamura (National Defense Academy, Japan)

Optimal Major Garbage Collection Interval with Incremental Garbage Collection
Syouji Nakamura (Kinjo Gakuin University, Japan)
Keiko Nakayama (Chukyo University, Japan)
Toshio Nakagawa (Aichi Institute of Technology, Japan)

Optimal Age Replacement and Inspection Policies with Random Failure and Replacement Times
Xufeng Zhao (Aichi Institute of Technology, Japan)
Toshio Nakagawa (Aichi Institute of Technology, Japan)

Discrete Maintenance Models of Armour Block Facility under Peaks-Over-Threshold
Takashi Satow (Tottori University, Japan)
Yoshiharu Matsumi (Tottori University, Japan)
Takao Ota (Tottori University, Japan)

SESSION 10

Network Reliability Modeling
Chair: Min Xie (City University of Hong Kong, Hong Kong)

Learning Failure Prediction Bayesian Networks based on Genetic Algorithms
Zhiqiang Cai (Northwestern Polytechnical University, China)
Shudong Sun (Northwestern Polytechnical University, China)
Shubin Si (Northwestern Polytechnical University, China)
Ning Wang (Northwestern Polytechnical University, China)

Using DRBD in the Assessment of WSN Node Reliability
Salvatore Distefano (University of Messina, Italy)

Global Reliability Evaluation of Distributed Communication Networks
Mohd Ashraf (Gautam Buddha University, India)
Rajesh Mishra (Gautam Buddha University, India)

Neural Networks Based Approach to Enhance Space Hardware Reliability
Ricardo S. Zebulum (California Institute of Technology, USA)
Anilkumar Thakoor (California Institute of Technology, USA)
Thomas Lu (California Institute of Technology, USA)
Lauro Franco (California Institute of Technology, USA)
Tsung Han Lin (California Institute of Technology, USA)
S. S. McClure (California Institute of Technology, USA)

12:00 pm - 1:00 pm Conference Luncheon

1:30 pm - 3:00 pm

SESSION 11

Maintainability & Availability
Chair: Ruey Huei Yeh (National Taiwan University of Science and Technology, Taiwan)

An Alternative Approach for Measuring Process Performance with Asymmetric Tolerances
Chien-Wei Wu (National Taiwan University of Science and Technology, Taiwan)

The Effect of MA(q) Model on the Performance of EWMA Control Charts
Shin-Li Lu (Aletheia University, Taiwan)
Wen-Chih Chiu (Aletheia University, Taiwan)

System Reliability of a Stochastic Manufacturing Network with Reworking Action and Different Yield Rates
Ping-Chen Chang (National Taiwan University of Science & Technology, Taiwan)
Yi-Kuei Lin (National Taiwan University of Science & Technology, Taiwan)
Mingchih Chen (Fu-Jen Catholic University, Taiwan)

Optimal Maintenance Policy under a Threshold Value on Failure Rate for Repairable Leased Facilities
Ruey Huei Yeh (National Taiwan University of Science and Technology, Taiwan)
Wen Liang Chang (Cardinal Tien College of Healthcare & Management, Taiwan)

SESSION 12

Quality Management and Engineering in Design
Chair: Kambiz Farahmand (North Dakota State University, USA)

Good Fabrication Practices of Total Quality Management
Satish Chandra Goyal (H.R. Institute of Technology, India)

Turnaround Management in an Oil Refinery
M. Bevilacqua (Universita Politecnica della Marche, Italy)
F. E. Ciarapica (Libera Universit‡ di Bolzano, Italy)
G. Giacchetta (Universita Politecnica della Marche, Italy)
B. Marchetti (Universita degli Studi eCampus, Italy)

Intuitionistic Fuzzy Approaches for Quality Evaluation
of Learning Objects
G. Albeanu (Spiru Haret University, Romania)
I. G. Duda (Spiru Haret University, Romania)

Optimizing Operation through Design for Manufacturing:
A Case Study
Kambiz Farahmand (North Dakota State University, USA)
Mohsen Hamidi (North Dakota State University, USA)
Raghavendra Adharapurapu (Cummins Inc., USA)

3:00 pm - 3:15 pm Coffee Break

3:15 pm - 5:15 pm

SESSION 13

Reliability Modeling and Prediction
Chair: Liyang Xie (Northeastern University, China)

Review of Artificial Neural Network Applications in Reliability
Prediction with a Focus on Design Phase and Railway
Rolling Stock Applications
Olga Fink (ETH Zurich, Switzerland)
Ulrich Weidmann (ETH Zurich, Switzerland)

Research of Reliability for Electronics Equipment Cooling System
*Xiaoming Liu (University of Electronic Science and
Technology of China, China)*
*Song Xiao (University of Electronic Science and Technology
of China, China)*
*Mengji Xie (University of Electronic Science and Technology
of China, China)*
*Zhonggan Zhu (University of Electronic Science and
Technology of China, China)*

Prediction of Reliability in Mining Using Genetic Algorithms
*Nick Vayenas (Laurentian University Mining Automation
Laboratory, Canada)*
*Sihong Peng (Laurentian University Mining Automation
Laboratory, Canada)*
Anis Farah (Laurentian University, Canada)

Development of a Criticality Index for Preventive
Maintenance Programme
M. Bevilacqua (Universita Politecnica della Marche, Italy)
F. E. Ciarapica (Libera Universit‡ di Bolzano, Italy)
G. Giacchetta (Universita Politecnica della Marche, Italy)
B. Marchetti (Universita degli Studi eCampus, Italy)

Bathtub-Type and Roller-Coaster-Type Failure Rates
Modeling
Liyang Xie (Northeastern University, China)
Jiafu Xu (Northeastern University, China)
Ningxiang Wu (Northeastern University, China)
Wenxue Qian (Northeastern University, China)

SESSION 14

Network Reliability & Performance Analysis
Chair: Yi-Kuei Lin (National Taiwan University of Science &
Technology, Taiwan)

Performance Evaluation for ERPS in terms of Individual
Performance
Shin-Guang Chen (Tungnan University, Taiwan)

Quality and Reliability Assessment of CCTV Images
Yi-Ping Chen (Da-Yeh University, Taiwan)
Ming-Der Yang (National Chung Hsing University, Taiwan)
Tung-Yen Wu (National Chung Hsing University, Taiwan)
Tung-Ching Su (National Quemoy University, Taiwan)

Cost Measures and Setup Determination for Manufacturing
Processes under Multi-state Performance Deterioration
Bi-Min Hsu (Cheng-Shiu University, Taiwan)
*Ming-Hung Shu (National Kaohsiung University of Applied
Sciences, Taiwan)*

A Study on Warranty and Consumer Dissatisfaction
Jyh-Wen Ho (Aletheia University, Taiwan)

The Development of Noise Prediction Model with Neural
Network for Projector Design
Wei-Jung Shiang (Chung Yuan Christian University, Taiwan)
Chih-Hao Huang (Chung Yuan Christian University, Taiwan)

Evaluation of Reliability for a Cloud Computing System through
Multiple Minimal Paths Subject to Maintenance Budget
*Ping-Chen Chang (National Taiwan University of Science &
Technology, Taiwan)*
*Yi-Kuei Lin (National Taiwan University of Science &
Technology, Taiwan)*

Saturday, August 6, 2011
8:00 am Registration - Continental Breakfast

8:30 am - 10:30 am

SESSION 15

Software Quality and Reliability Modeling with
Applications
Chair: Xuemei Zhang (AT&T Labs, USA)

Based on .NET and MATLAB Software Design of Reliability
Assessment of Equipment
Wenjin Zhang (Beihang University, China)
Xuan Lu (Beihang University, China)

Exploring Several Strategies to Improve Software Quality
Prediction
Kehan Gao (Eastern Connecticut State University, USA)
Taghi M. Khoshgoftaar (Florida Atlantic University, USA)

A Comparative Study of Filter-Based and Wrapper-Based
Feature Ranking Techniques for Software Quality Modeling
Taghi M. Khoshgoftaar (Florida Atlantic University, USA)
Kehan Gao (Eastern Connecticut State University, USA)
Lofton A. Bullard (Florida Atlantic University, USA)

Discrete Time Models of On-demand Bus System in Local Area
Junji Koyanagi (Tottori University, Japan)
Hajime Kawai (Tottori University, Japan)

Service Reliability Modeling for Modern Network Solutions with Complex and Flexible Architectures
Xuemei Zhang (AT&T Labs, USA)
Hoang Pham (Rutgers University, USA)
Carolyn R. Johnson (AT&T Labs, USA)

SESSION 16

System Reliability Engineering and Analysis
Chair: John Sloan (Florida Atlantic University, USA)

A Survey of Data Fusion Algorithms For Reliability Analysis
Janell Duhaney (Florida Atlantic University, USA)
Taghi M. Khoshgoftaar (Florida Atlantic University, USA)
John C. Sloan (Florida Atlantic University, USA)
Pierre P. Beaujean (Florida Atlantic University, USA)

An Empirical Estimator for Reversed Hazard Rate Function
Chathuri Lakshika Jayasinghe (RMIT University, Australia)
Panlop Zeephongsekul (RMIT University, Australia)

Impact of the Process Parameters Estimation on the VSI $\bar{X}$ Chart
Ying Zhang (Ecole Centrale de Nantes & IRCCyN, France)
Philippe Castagliola (Universite de Nantes & IRCCyN, France)

A Streaming Wavelet Packet Decomposition Approach for Real-Time Vibration Analysis
Randall Wald (Florida Atlantic University, USA)
Taghi M. Khoshgoftaar (Florida Atlantic University, USA)
John C. Sloan (Florida Atlantic University, USA)
Pierre-Philippe Beaujean (Florida Atlantic University, USA)

A Strategy for Data-Driven Testing of an Ocean Turbine Drivetrain
John C. Sloan (Florida Atlantic University, USA)
Taghi M. Khoshgoftaar (Florida Atlantic University, USA)
Bassem Alhalabi (Florida Atlantic University, USA)

10:30 am - 10:45 am Coffee Break

10:45 am - 1:00 pm

SESSION 17

Software Project Evaluation & Quality Management
Chair: Koichi Tokuno (Tottori University, Japan)

Statistical Evaluation of Process Monitoring with Design Quality Assessment for Software Process Improvement
Yuki Ichinose (Tottori University, Japan)
Atsushi Fukuta (Tottori University, Japan)
Shigeru Yamada (Tottori University, Japan)

Multiple Response Optimization in Fuel Injection Phasing and Ignition Timing of IC-Engine: A Real Case in an Automotive Company
M. Bashiri (Shahed University, Iran)
H. Badri (Amirkabir University of Technology, Iran)
T. H. Hejazi (Amirkabir University of Technology, Iran)
A. A. Mahmoudi (Iranian University of Science and Technology, Iran)

Characteristic Analysis of Software Development Organizations Having Great Success in Quality Improvement
Naomi Honda (NEC Corporation, Japan)
Shigeru Yamada (Tottori University, Japan)

An Empirical Study on Statistical Analysis based on Software Process Monitoring Data with Initial Project Risks
Shigeru Yamada (Tottori University, Japan)
Junpei Yamakawa (Tottori University, Japan)

A Note on Structure Equation Modeling for Software Reliability Assessment based on Review-Related Data
Mitsuhiro Kimura (Hosei University, Japan)
Takaji Fujiwara (SRATECH Laboratory Inc., Japan)
Shigeru Yamada (Tottori University, Japan)

Statistical Analysis based on Design of Experiment for Decreasing Mold Defective Fraction in Automotive Rubber Parts Production
Shigeru Yamada (Tottori University, Japan)
Kyohei Sakaguchi (Tottori University, Japan)

SESSION 18

Engineering Reliability Design and Applications
Chair: Feng-Bin Sun (Hitachi Global Storage Technologies, USA)

Exhaust System Reliability Evaluation
Shengbin (Burt) Lin (Tenneco Inc., USA)

Opportunistic Maintenance Optimization for Wind Turbine Systems Considering Imperfect Maintenance Actions
Fangfang Ding (Concordia University, Canada)
Zhigang Tian (Concordia University, Canada)

Comparison of Designs Through Performance Degradation Testing
Guangbin Yang (Ford Motor Company, USA)

Application of Statistical Modeling to Analyze the Survival of Patients with Gastric Cancer in North of Iran
S. Sadeghi (Mazandaran University of Medical Science, Iran)
J. Yazdanicharati (Mazandaran University of Medical Science, Iran)
F. Haghighi (University of Tehran, Iran)
G. Janbabai (Mazandaran University of Medical Science, Iran)

System Reliability with Competing Components and Load Sharing – A Hard Disk Drive Perspective
Feng-Bin Sun (Hitachi Global Storage Technologies, USA)
Donald Gillis (Hitachi Global Storage Technologies, USA)

Optimal Replacement Model with Age-Dependent Failure Type based on a Cumulative Repair- Cost Limit Policy
Yen-Luan Chen (Takming University of Science and Technology, Taiwan)
Shey-Huei Sheu (Providence University, Taiwan)
Chin-Chih Chang (Providence University, Taiwan)

1:00 pm Adjourn!