

REG2010

PROGRAM

of the 4th International Workshop on Reliable Engineering Computing, March 2 – 5, 2010
 Furama Riverfront Hotel, Singapore

| | | 02 Mar 2010 | 03 Mar 2010 | 04 Mar 2010 | 05 Mar 2010 |
|------|----|-------------|-------------------------------------|---|-------------------------------------|
| 0800 | | | Registration | Registration | |
| | 30 | | | | Opening (Venus I) |
| 0900 | | | Opening Plenary Lecture (Venus I) | Plenary Lecture II (Venus I) | Plenary Lecture III (Venus I) |
| | 30 | | | | |
| 1000 | | | Plenary Lecture I (Venus I) | CADLM Award Presentation & Ceremony (Venus I) | Plenary Lecture IV (Venus I) |
| | 30 | | | | |
| 1100 | | | ASS 1 (Venus I) | RRO 1 (Jupiter II) | MPI 1 (Venus I) |
| | 30 | | | | |
| 1200 | | | Lunch (SQUARE Restaurant) (Level 2) | Lunch (SQUARE Restaurant) (Level 2) | Lunch (SQUARE Restaurant) (Level 2) |
| | 30 | | | | |
| 1300 | | | Lunch (SQUARE Restaurant) (Level 2) | Lunch (SQUARE Restaurant) (Level 2) | Lunch (SQUARE Restaurant) (Level 2) |
| | 30 | | | | |

ASS = Analysis of Systems and Structures
 RSS = Robustness of Systems and Structures
 RAS = Reliability Analysis and Simulation

RRO = Robust and Reliability-based Optimization
 MPI = Modeling, Prediction and Identification
 URM = Uncertainty and Risk Management

| | | | | | | | | |
|------|----|--|--|-----------------------|---|-----------------------|--------------------|-----------------------|
| 1400 | | | ASS 2 (Venus I) | RRO 2 (Jupiter II) | RAS 1 (Venus I) | RSS 1 (Jupiter II) | MPI 2 (Venus I) | URM 2 (Jupiter II) |
| | 30 | | | | | | | |
| 1500 | | | Tea Break | | Tea Break | | Tea Break | |
| | 30 | | | | | | | |
| 1600 | | | ASS 3 (Venus I) | RRO 3 (Jupiter II) | RAS 2 (Venus I) | RSS 2 (Jupiter II) | MPI 3 (Venus I) | URM 3 (Jupiter II) |
| | 30 | | | | | | | |
| 1700 | | | Sightseeing Tour - 17:15 Bus to Singapore Flyer - 18:30 return by Boat to Clarke Quay - 19:15 Bus optional to Chinatown or to Hotel | | Banquet Grand Shanghai Restaurant | | Closing (Venus I) | |
| | 30 | | | | | | | |
| 1800 | | Reception & Registration (Poolside - Level 5) | | | | | | |
| 30 | | | | | | | | |
| 1900 | | | | | | | | |
| 30 | | | | | | | | |
| 2000 | | | | | | | | |
| 30 | | | | | | | | |
| 2100 | | | | | | | | |
| 30 | | | | | | | | |

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This workshop is supported by:

- Office of Naval Research Global
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- Singapore Exhibition & Convention Bureau
- Lee Foundation
- Sun Microsystems
- National University of Singapore
- Center for Reliable Engineering (REC),
Georgia Institute of Technology, Savannah

The organizers appreciate the support of these organizations. REC2010 would not have been possible without their contributions and commitment.

Conference Venue

Furama Riverfront Hotel

405 Havelock Road, Singapore 169633

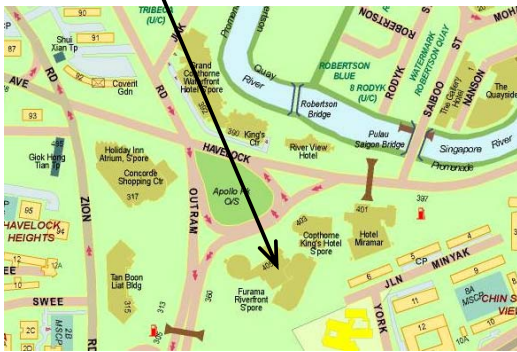
Tel: +65 6333 8898 Fax: +65 6733 1588

Internet Home Page: <http://www.furama.com/riverfront>

E-Mail Address: riverfront@furama.com

Conference Rooms: Venus I & Jupiter II, Level 3

Conference Venue



Banquet Venue

Grand Shanghai Restaurant

390 Havelock Road, Level 1 King's Centre

Singapore 169662

Tel: +65 6836 6866 Fax: +65 6738 2083

E-Mail Address: grandshanghai@grandcoptorne.com.sg



Banquet Venue

Conference Venue

Tuesday, March 2, 2010

Registration **18:00 – 20:00**

Hotel Furama Riverfront, Poolside, Level 5

Welcome Reception **18:00 – 20:00**

Hotel Furama Riverfront, Poolside, Level 5

Wednesday, March 3, 2010

Registration **08:00 – 09:00**

Outside Room Venus I, Level 3

Opening **08:40 – 09:00**

Venus I

Chair : M. Beer & R. L. Muhanna

Opening Address by the Head of Department, Civil Engineering, NUS

F. H. Lee

Opening Plenary Lecture **09:00 – 09:50**

Venus I

Chair : M. Beer & R. L. Muhanna

On Current/Emerging Approaches for Stochastic Engineering Analyses

P. D. Spanos

Plenary Lecture I **09:50 – 10:40**

Venus I

Chair : M. Beer & R. L. Muhanna

Data Mining Applications in the Automotive Industry

R. Kruse, M. Steinbrecher, C. Moewes*

Tea Break **10:40 – 11:00**

Analysis of Systems and Structures, Session 1**11:00 – 12:30*****Venus I*****Chair : *M. Modares & D. Moens***

Specification of uncertain and variable model data in structural dynamics analysis

*D. Vandepitte, D. Moens**

Model Fusion under Probabilistic and Interval Uncertainty, with Application to Earth Sciences

*O. Ochoa, A. A. Velasco, C. Servin, V. Kreinovich**

Recursive Least-Squares Estimation in Case of Interval Observation Data

H. Kutterer, I. Neumann*

Robust and Reliability-based Optimization, Session 1 11:00 – 12:30***Jupiter II*****Chair : *Y. V. Kostyuchenko & T. Kawamura***

Economic Emission Load Dispatch using Interval Differential Evolution Algorithm

*A. Gupta, S. Ray**

Automated Synthesis of Fixed Structure QFT Prefilters using Interval Constraint Satisfaction Techniques

P. S. V. Nataraj, M. M. Deshpande*

Performance Measures for Robust Design and its applications

*T. Kawamura**

Lunch**12:30 – 14:00**

Analysis of Systems and Structures, Session 2 **14:00 – 15:30*****Venus I*****Chair : *D. G. Lu & W. Verhaeghe***

A fuzzy finite element analysis technique for structural static analysis based on interval fields

*W. Verhaeghe**, *M. De Munck*, *W. Desmet*, *D. Vandepitte*, *D. Moens*

Primary and Derived Variables with the Same Accuracy in Interval Finite Elements

M. V. Rama Rao, *R. L. Mullen*, *R. L. Muhanna**

A Verified Automatic Contour Integration Algorithm

*N. Yamanaka**, *S. Oishi*, *T. Ogita*

Robust and Reliability-based Optimization, Session 2 **14:00 – 15:30*****Jupiter II*****Chair : *X. Guo & N. Thakur***

Solving constrained optimization problems via Subset Simulation

A H. S. Li, *S. K. Au**

Reliability-based design by adaptive quantile estimation

J. Ching, *W. C. Hsu**

Discrete Robust Design Optimization of Stochastic Dynamical Systems

*H. A. Jensen**, *J. G. Sepulveda*

Tea Break**15:30 – 15:50**

Analysis of Systems and Structures, Session 3 **15:50 – 16:50*****Venus I*****Chair : *H. Zhang & N. Yamanaka***

Analytical study of a 4-Span Bridge with Advanced Materials

C. A. Cruz Noguez, *M. S. Saiidi**, *D. Hillis*

Reliable Dynamic Analysis of an Uncertain Shear Beam

*M. Modares**, *I. Olabarri*, *R. L. Mullen*

Robust and Reliability-based Optimization, Session 3 **15:50 – 16:50*****Jupiter II*****Chair : *S. K. Au & M. Vořechovský***

Confidence single-level formulation in structural robust optimization and its solution aspect

*X. Guo**

Towards Optimal Effort Distribution in Process Design under Uncertainty, with Application to Education

O. Kosheleva, *V. Kreinovich**

Thursday, March 4, 2010

Registration

08:00 – 09:00

Outside Room Venus I, Level 3

Plenary Lecture II

09:00 – 09:50

Venus I

Chair : R. L. Mullen & M. Beer

Intelligent Optimal Design in Mechatronics

J. Zarka, D. Bordet, B. Kayal*

CADLM Award Presentation and Ceremony

09:50 – 10:40

Venus I

Chair : R. L. Mullen & M. Beer

Fuzzy Architecture of Safety-Relevant Vehicle Systems

V. Ivanov, B. Shyrokau*

Tea Break

10:40 – 11:00

Analysis of Systems and Structures, Session 4

11:00 – 12:30

Venus I

Chair : A. Nasekhian & K. Ozaki

Exact Determinant of Integer Matrices

*T. Ogita**

Vertical Incremental Dynamic Analysis for Assessing Progressive Collapse Resistance and Failure Modes of Structures

D. G. Lu, P. Y. Song, S. S. Cui, Z. H. Chen*

Finite Element Structural Analysis using Imprecise Probabilities Based on P-Box Representation

H. Zhang, R. L. Mullen, and R. L. Muhanna*

Robust and Reliability-based Optimization, Session 4 11:00 – 12:30

Jupiter II

Chair : H. Kutterer & A. Takayasu

Simulation based uncertainty handling with polyhedral clouds

*M. Fuchs**

Robust design with uncertain data and response surface approximation

W. Graf, J. U. Sickert, S. Pannier, M. Kaliske*

A general purpose software for reliability-based optimal design

M. A. Valdebenito, E. Patelli, G. I. Schuëller*

Lunch

12:30 / 13:00 – 14:00

Reliability Analysis and Simulation, Session 1**14:00 – 15:30*****Venus I*****Chair : *O. Iruansi & E. Patelli***

Estimating the effect of Manufacturing Variability on Turbine Blade Life

*N. Thakur**, *A. J. Keane*, *P. B. Nair*

Reliability Analysis under Integrated Input Variable and Metamodel Uncertainty based on Bayesian Approach

*D. An**, *J. H. Choi*, *J. Won*

On Correlation Control in Monte Carlo type Sampling

*M. Vořechovský**

Robustness of Systems and Structures, Session 1**14:00 – 15:30*****Jupiter II*****Chair : *V. Ivanov & W. C. Hsu***

Robust Assessment of Shear Parameters in Geotechnics

W. Fellin, *M. Oberguggenberger**

Robustness against the noise in sensors network design for heritage structures: the case study of the Colosseum

G. Monti, *G. Quaranta*, *G. C. Marano**

Optimal Sensor Placement in Environmental Research: Designing a Sensor Network under Uncertainty

N. A. Jaimes, *C. Tweedie*, *T. Magoč*, *V. Kreinovich**, *M. Ceberio*

Tea Break**15:30 – 15:50**

Reliability Analysis and Simulation, Session 2**15:50 – 17:20*****Venus I*****Chair : *S. Freitag & T. Nishimura***

Extension of sample size in Latin Hypercube Sampling with correlated variables

*M. Vořechovský**

Random Set Finite Element Method Application to Tunnelling

A. Nasekhian, H. Schweiger*

Interval Estimates of Structural Reliability

H. Zhang, R.L. Mullen, R. L. Muhanna*

Robustness of Systems and Structures, Session 2**15:50 – 17:20*****Jupiter II*****Chair : *T. Ogita & P. S. V. Nataraj***

Robustness Assessment for Progressive Collapse of Framed Structures using Pushdown Analysis Method

D. G. Lu, S. S. Cui, P. Y. Song, Z. H. Chen*

Exact 2D Convex Hull for Floating-point Data

K. Ozaki, T. Ogita, S. Oishi*

On The Stability And Controllability Of Fuzzy Control Set Differential Equations

P.D. Nguyen, Q.D. Lam*

Friday, March 5, 2010

Plenary Lecture III

09:00 – 09:50

Venus I

Chair : R. L. Muhanna & R. L. Mullen

U.S. Navy Mantech B2PCOE and the Lead Free Manhattan Project

R.R. Reilly

Plenary Lecture IV

09:50 – 10:40

Venus I

Chair : R. L. Muhanna & R. L. Mullen

Description and Analysis of Fuzzy Information

*R. Viertl**

Tea Break

10:40 – 11:00

Modeling, Prediction and Identification, Session 1

11:00 – 12:30

Venus I

Chair : M. Oberguggenberger & J. H. Gang

Uncertainty Theory with Applications

*B. Liu**

Identification and prediction of time-dependent structural behavior with recurrent neural networks for uncertain data

S. Freitag, W. Graf, M. Kaliske*

Predicting the Shear Strength of RC Beams without Stirrups Using Bayesian Neural Network

O. Iruansi, M. Guadagnini, K. Pilakoutas, K. Neocleous*

Uncertainty and Risk Management, Session 1

11:00 – 12:30

Jupiter II

Chair : Y. V. Kostyuchenko & L. Mohammadi

Of Reality, Quality and Murphy's Law Strategies for Eliminating Human Error and Mitigating its Effects

*F. Knoll**

Assessment of Structural Integrity of Titanium Weldments for U.S. Navy Applications

*W. C. Mohr**

A novel risk definition for portfolio selection with uncertain returns

*X. Huang**

Lunch

12:30 – 14:00

Modeling, Prediction and Identification, Session 2 **14:00 – 15:30****Venus I****Chair : G. C. Marano & D. An**

Bayesian Approach for Fatigue Life Prediction from Field Inspection

*D. An, J. H. Choi**

Damage Factor Estimation of Crane-Hook (A Database Approach with Image, Knowledge and Simulation)

T. Nishimura, T. Muromaki, K. Hanahara, Y. Tada, S. Kuroda, T. Fukui*

Material Identification of Solder Joint in Microelectronics Package Using Bayesian Approach

J. H. Gang, J. H. Choi, D. An, J. W. Joo*

Uncertainty and Risk Management, Session 2 **14:00 – 15:30****Jupiter II****Chair : S. Ray & C. Meola**

Lead Free Manhattan Project Best Practices and Benchmarking Center of Excellence

*C. Meola**

Quantitative Risk Assessment Model for Fire in Road Tunnels with Parameter Uncertainty

*Q. Meng, X. Qu**

Effect of Atmospheric Temperature and Pressure on Confined Space Risks at Mine Reclamation Sites

L. Mohammadi, J. A. Meech*

Tea Break **15:30 – 15:50**

Modeling, Prediction and Identification, Session 3 **15:50 – 16:50****Venus I****Chair : M. Fuchs & S. Cui**

A priori inverse operator estimation for guaranteed error estimate

A. Takayasu, S. Oishi, T. Kubo*

A Novel Robust Control Strategy for Interval Plants Using The Two Loop MFC and CDM

*S. Bhusnur, S. Ray**

Uncertainty and Risk Management, Session 3 **15:50 – 16:50****Jupiter II****Chair : X. Huang & X. Qu**

Way to reduce the uncertainties on ecological consequences assessment of technological disasters using satellite observations

Y.V. Kostyuchenko, I. Kopachevsky, D. Solovyov, Y. Bilous, V. Gunchenko*

Transboundary Socio-Economic Safety Assessment: Sustainability toward Anthropogenic Hazards and Bioproductivity Degradation

Y.V. Kostyuchenko, M. László, M. Yuschenko, I. Kopachevsky, Y. Bilous*

Closing **16:50 – 17:00****Venus I**