

# 8<sup>TH</sup>

## INTERNATIONAL WORKSHOP ON RELIABLE ENGINEERING COMPUTING *Computing with Confidence*

16-18 July 2018 | Liverpool, United Kingdom

# REC<sub>2018</sub>



UNIVERSITY OF  
LIVERPOOL

Institute for Risk  
and Uncertainty

# REC<sub>2018</sub>



REC2018.uk



SUNDAY, 15 July 2018 | Icebreaker | Philharmonic Pub, 36 Hope St, Liverpool L1 9BX

**MONDAY, 16 July 2018 | Central Teaching Hub, University of Liverpool | Theatre B****8:30** Registration**9:40** Opening Remarks**9:55** Keynote Presentation: **Matthias Troffaes**  
*Simulation methods for quantification of severe uncertainty***10:45** Break**11:10** **Michael Oberguggenberger**, M. Schwarz: *Stochastic methods in damage detection***11:35** **Dominik Hose**, M. Hanss: *Possibilistic identification of reliable finite impulse response models***12:00** **Ekaterina Auer**, C. Benavente-Peces, A. Ahrens: *Influence of uncertainty and numerical errors in the context of MIMO systems***12:25** **Steffen Freitag**, P. Edler, K. Kremer, G. Meschke: *Surrogate modelling for solving optimization problems with polymorphic uncertain data***12:50** Lunch**14:00** **David Betancourt**, Rafi L. Muhanna, Robert L. Mullen: *Interval field for spatially and temporally dependent uncertainty-supervised machine learning approach***14:25** **Jack Pierce-Brown**, L.C. Neves, D.L. Brown: *Uncertainty quantification for random fields estimated from effective moduli of elasticity***14:50** **Niklas Schietzold**, W. Graf, M. Kaliske: *Polymorphic uncertainty modeling for optimization of timber structures***15:15** **Matthias Faes**, B. Van Doninck, M. Imholz, D. Moens: *Product reliability under process variability: an integrated process-product reliability based design optimisation approach***15:40** Break**16:10** **Silvia Tolo**, E. Patelli: *Bayesian averaging technique for surrogate models***16:35** **Longxue He**, A. Topa Gomes, M. Broggi, M. Beer: *Risk analysis of infinite slope failure using advanced Bayesian networks***17:00** **Juan Chiachío-Ruano**, M. Chiachío-Ruano, J. Andrews: *Bayesian learning in expert systems using plausible Petri nets***17:25** **Mehdi Modares**, J. Mohammadi: *Building envelope inspection management using a hybrid statistical random sampling and Bayesian updating approach***17:50** Close**19:00** Evening Social | The Cavern Club, 10 Mathew St, Liverpool L2 6RE

**TUESDAY, 17 July 2018 | Central Teaching Hub, University of Liverpool | Theatre B**

**9:30** Keynote Presentation: **Didier Dubois**  
*Uncertainty theories: a unified view*

10:20 **Mehdi Modares**, R.L. Muhanna, and R L. Mullen: *Determination of task temporal variations in construction scheduling using imprecise probability*

10:45 Break

11:10 **Vladik Kreinovich**, A. M. Pownuk, O. M. Kosheleva, A. Belina: *When is propagation of interval and fuzzy uncertainty feasible?*

11:35 **Jonathan Sadeghi**, M. de Angelis, E. Patelli: *Deep learning using interval neural networks with guaranteed generalisation properties*

12:00 M. Troffaes, **Thomas Fetz**, M. Oberguggenberger: *Iterative importance sampling for estimating expectation bounds under partial probability specifications*

12:25 **Augustin Thomas**: *On generalized linear models under interval data*

12:50 Lunch

14:00 **Marcos Valdebenito**, I.V. Gonzalez, H.A. Jensen: *Global sensitivity analysis of uncertain linear structures subject to static load*

14:25 **Domenico Altieri**, E. Patelli: *An efficient method for estimating conditional failure probabilities*

14:50 M. Joldes, C. Lauter, M. Ceberio, O. Kosheleva, **Vladik Kreinovich**: *Why Taylor models and modified Taylor models are empirically successful: a symmetry-based explanation*

15:15 A. Vaccaro, M. Ceberio, **Vladik Kreinovich**: *What is the economically optimal way to guarantee interval bounds on control?*

15:40 Break

**Group photo**



16:10 **Marco Daub**, F. Duddeck: *Worst-case solution spaces for systems design under uncertainties*

16:35 **Mark Bankhead**, K. Fritsch, J. MacDonald-Taylor, G Ecclestone, W. J. O'Brien: *Implementation of a digital twin of a nuclear waste management facility*

17:00 **Franz Knoll**: *Human involvement – the unforeseen and robustness*

17:25 Close

18:30 **Dinner | Museum of Liverpool, Liverpool Waterfront, Pier Head, Liverpool L3 1DG**

## WEDNESDAY, 18 July 2018 | Central Teaching Hub, University of Liverpool | Theatre B

- 9:00** Keynote Presentation: **Vicki Bier**  
*Methods for experts judgment in terrorism risk assessment*
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- 9:50 **Bright Oparaji**, E. Patelli: *A comparison of robust artificial neural network and Gaussian process model for interval regression analysis in engineering*
- 10:15 **Noémie Le Carrer**, S. Ferson, P. L. Green: *Robust optimisation of cargo loading and ship scheduling in tidal areas*
- 10:45** Break
- 11:10 **Roberto Rocchetta**, M. Compare, L. Bellani, E. Zio, E. Patelli: *A reinforcement learning framework for optimisation of power grid operations and maintenance*
- 11:35 **Robert Mullen** (on behalf of L. Kolev): *P-solutions of linear and nonlinear interval parametric systems and applications*
- 12:00 **Josephine Roscoe**, M. White, S. Hodge: *V&V for piloted flight simulation: challenges in heave motion cueing fidelity*
- 12:25 **Héctor Diego Estrada Lugo**, M. De Angelis, E. Patelli: *Bayesian networks with imprecise datasets: application to oscillating water column*


## 12:50 Lunch

- 13:50 **Dominic Calleja**: *Uncertainty challenges in fusion energy*
- 14:15 **Scott Ferson**, R. Birch, M. De Angelis, E. Patelli, D. Calleja: *Smarter mobility: safer, greener, cheaper*

## 14:40 Closing Remarks

## 16:00 Football (soccer) | Sports & Fitness Centre, University of Liverpool

REC2018

 Lecture Theatre B, Central Teaching Hub, University of Liverpool

Dinner

 Museum of Liverpool

Ice breaker

 Philharmonic Dining Rooms

Football (soccer)

 Sports and Fitness Centre

8th International Workshop on Reliable Engineering Computing

