Welcome to

15th IEEE International Symposium on High Assurance Systems Engineering

HASE 2014

"Towards 21st Century High Assurance System's Engineering"

January 9 - 11, 2014

Newport Beachside Hotel & Resort

Miami, Florida, USA

http://hase2014.cis.fiu.edu/

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Welcome to HASE 2014

This year the 15th edition of the High Assurance Systems Engineering Conference (HASE) is being held in the beautiful city of Miami, Florida. HASE continues to be a forum where researchers and practitioners come to discuss and present their ideas, tools, and novel techniques used to design and construct systems that, in addition to meeting their functional objectives are safe, secure, and reliable.

The HASE community has a vital role to play in the 21st century, that is, the development of new tools and techniques for ensuring the reliability, security and safety of systems built using a variety of development methodologies and paradigms on various platforms and architectures. To this end, the theme of the conference this year is "Towards 21st Century High Assurance System's Engineering".

The HASE 2014 conference program includes twelve paper sessions in areas such as, *fault analysis*, *formal methods*, *reliability*, *privacy*, *safety*, *security*, and *testing*. The program also includes three exciting keynote talks on a cross-section of topics related to high assurance systems, and a panel that is expected to be informative and provocative.

After attending the program events we encourage you to explore the 5th largest urban city in the USA. Miami is a major hub for culture, entertainment, arts, and fashion (e.g., the famous South Beach area). There are several attractions and activities located near the conference venue including: Aventura Mall, Oleta River State Park, many Caribbean and Latin American restaurants, and a cadre of watersports!

The HASE 2014 organizers hope that you find the conference program informative and enjoy your time in Miami with friends, colleagues and collaborators.

Raymond A. Paul and Jie Xu   Peter J. Clarke and Jinpeng Wei
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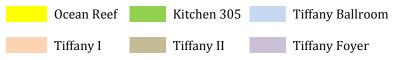Victor Winter
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Jie Xu
University of Leeds, UK

I-Ling Yen
University of Texas at Dallas

Conference Events Overview

Time	Wednesday, Jan. 8th	
18:00 – 20:00	*Welcome Reception*	
Time	**Thursday, Jan. 9th**	
08:45 – 09:00	Welcome	
09:00 – 10:00	Keynote: Lorraine Fesq	
10:00 – 10:30	*Break*	
10:30 – 12:00	Session 1A: Security I	Session 1B: Fault Analysis
12:00 – 13:30	*Lunch*	
13:30 – 15:00	Session 2A: Testing I	Session 2B: Formal Methods
15:00 – 15:30	*Break*	
15:30 – 17:00	Panel	
Time	**Friday, Jan. 10th**	
08:45 – 09:00	Announcements	
09:00 – 10:00	Keynote: Juan Colmenares	
10:00 – 10:30	*Break*	
10:30 – 12:00	Session 3A: Reliability	Session 3B: Safety
12:00 – 13:30	*Lunch*	
13:30 – 15:00	Session 4A: Invited Paper Session	Session 4B: Testing II
15:00 – 15:30	*Break*	
15:30 – 17:00	Session 5A: Security II	Session 5B: Failure Analysis
19:00 – 22:00	*Conference Dinner*	
Time	**Saturday, Jan. 11th**	
08:45 – 09:00	Announcements	
09:00 – 10:00	Keynote: Declan Byrne	
10:00 – 10:30	*Break*	
10:30 – 12:00	Session 6A: Privacy and Safety	Session 6B: Model Analysis
12:00	**Conference Ends**	

Ocean Reef	Kitchen 305	Tiffany Ballroom
Tiffany I	Tiffany II	Tiffany Foyer

Thursday – January 9, 2014

09:00 – 10:00

Keynote – *Tiffany Ballroom*

High-Assurance Engineering for NASA's Spacecraft: Learning from the Past to Reach the Stars

Lorraine Fesq

Jet Propulsion Laboratory, NASA/California Institute of Technology

10:30 – 12:00

Session 1A: Security I - *Tiffany I*
Session Chair: Takao Okubo, *Inst. of Information Security, Japan*

- **Using Attack Surface Entry Points and Reachability Analysis to Assess the Risk of Software Vulnerability Exploitability.** Awad A. Younis, Yashwant K. Malaiya and Indrajit Ray.

- **Leveraging Variations in Event Sequences in Keystroke-Dynamics Authentication Systems.** Zahid Syed, Sean Banerjee and Bojan Cukic.

- **A Model-Based Intrusion Detection System for Smart Meters.** Farid M. Tabrizi and Karthik Pattabiraman

Session 1B: Fault Analysis - *Tiffany II*
Session Chair: Victor Winter, *University of Nebraska at Omaha, USA*

- **Evaluating Distortion in Fault Injection Experiments.** Erik van der Kouwe, Cristiano Giuffrida and Andrew S. Tanenbaum.

- **A Practitioner's Guide to Software-based Soft-Error Mitigation Using AN-Code.** Martin Hoffmann, Peter Ulbrich, Christian Dietrich, Horst Schirmeier, Daniel Lohmann and Wolfgang Schröder-Preikschat.

- **ArCMAPE: A Software Product Line Infrastructure to Support Fault-Tolerant Composite Services.** Amanda S. Nascimento, Cecilia Rubira and Fernando Castor.

<u>13:30 – 15:00</u>

Session 2A: Testing I - *Tiffany I*
Session Chair: Helene Waeselynck, *LAAS-CNRS, France*

- **Fail-Safe Test Generation in Safety Critical Systems.** Anneliese Andrews, Salwa Elakeili and Salah Boukhris.

- **Making an ALARP Decision of Sufficient Testing.** Mahnaz Malekzadeh and Iain Bate.

- **Combinatorial Test Generation For Software Product Lines Using Minimum Invalid Tuple.** Linbin Yu, Feng Duan, Yu Lei, Raghu N. Kacker and D. Richard Kuhn.

Session 2B: Formal Methods - *Tiffany II*
Session Chair: Marc Frappier, *Universite de Sherbrooke, Canada*

- **Stability Modeling and Verification of Humanoid Robot.** Yujian Fu and Steve Drager.

- **Temporal Verification of Simulink Diagrams.** Jiri Barnat, Petr Bauch and Vojtěch Havel.

- **Proving the Fidelity of Simulations of Event-B Models.** Faqing Yang, Jean-Pierre Jacquot and Jeanine Souquières.

15:30 – 17:00

Panel – *Tiffany Ballroom*

Towards 21st Century High Assurance System's Engineering

Moderator:

Remzi Seker - *Embry-Riddle Aeronautical University, USA*

Panelists:

Declan Byrne - *WiMAX Forum*, USA

Lorraine M. Fesq - *Jet Propulsion Laboratory, NASA/California Institute of Technology, USA*

John Knight - *University of Virginia, USA*

Karthik Pattabiraman - *University of British Columbia, Canada*

Jaideep Srivastava - *University of Minnesota, USA*

Jie Xu - *University of Leeds, UK*

Friday – January 10, 2014

09:00 – 10:00

Keynote – *Tiffany Ballroom*

Will Computer Systems with Performance Guarantees ever go Mainstream?

Juan Colmenares

Computer Science Laboratory (CSL) at Samsung Research America - Silicon Valley (SRA-SV).

10:30 – 12:00

Session 3A: Reliability - *Tiffany I*
Session Chair: Ann Tai, *WW Technology Group, USA*

- **A Novel Framework of Software Reliability Evaluation with Software Reliability Growth Models and Software Metrics.** Hiroyuki Okamura and Tadashi Dohi.

- **Towards Comprehensive Modeling of Reliability for Smart Grids: Requirements and Challenges.** Koosha Marashi and Sahra S. Sedigh.

- **An Empirical Failure-Analysis of a Large-Scale Cloud Computing Environment.** Peter Garraghan, Paul Townend and Jie Xu.

Session 3B: Safety - *Tiffany II*
Session Chair: Karthik Pattabiraman, *University of British Columbia, Canada*

- **Assuring Safety for Component Based Software Engineering.** Philippa Conmy and Iain Bate.

- **Analysis of Critical System Certification.** Panayiotis Steele and John Knight.

- **Using Program Transformation, Annotation, and Reflection to Certify a Java Type Resolution Function.** Victor Winter, Carl Reinke and Jonathan Guerrero.

13:30 – 15:00

Session 4A: Invited Paper Session - *Tiffany I*
Session Chair: Jie Xu, *University of Leeds, UK*

- **Policy-driven High Assurance Cyber Infrastructure-Based Systems.** Abdulrahman Almutairi, Tawfeeq A. Shawly, Saleh M. Basalamah and Arif Ghafoor.

- **Autonomous Decentralized High-Assurance Surveillance System for Air Traffic Control.** Tadashi Koga, Xiadong Lu, and Kinji Mori.

- **Mobile Testing-As-A-Service (MTaaS) –Infrastructures, Issues, Solutions and Needs.** Jerry Gao, Wei-Tek Tsai, Ray Paul, Xiaoying Bai and Tadahiro Uehara.

Session 4B: Testing II - *Tiffany II*
Session Chair: Yujian Fu, Alabama A&M University, USA

- **UML-Based Modeling of Robustness Testing.** Regina Moraes, Hélène Waeselynck and Jérémie Guiochet.

- **Testing of Memory Leak in Android Applications.** Hossain Shahriar, Sarah North and Edward Mawangi.

- **Trade-off Analysis for Selective versus Brute-Force Regression Testing in FSMWeb.** Anneliese Andrews and Hyunsook Do. (Invited Paper)

15:50 -17:00

Session 5A: Security II - *Tiffany I*
Session Chair: Yashwant Malaiya, *Colorado State University, USA*

- **Hardware Implementation of Secure Shamir's Secret Sharing Scheme.** Pei Luo, Andy Yu-Lun Lin, Zhen Wang and Mark Karpovsky.

- **Security Driven Requirements Refinement and Exploration of Architecture with multiple NFR points of view.** Takao Okubo, Nobukazu Yoshioka and Haruhiko Kaiya. (Short Paper)

- **Clicksafe: Providing Security Against clickjacking Attacks.** Jawwad A. Shamsi, Sufian Hameed, Waleed Rahman, Farooq Zuberi, Kaiser Altaf and Ammar Amjad. (Short Paper)

- **Proactive Model-Based Performance Analysis and Security Tradeoffs in a Complex System.** Jesse Musgrove, Bojan Cukic and Vittorio Cortellessa. (Short Paper)

Session 5B: Failure Analysis - *Tiffany II*
Session Chair: Tadashi Dohi, *Hiroshima University, Japan*

- **On the Need for Training Failure Prediction Algorithms in Evolving Software Systems.** Ivano Irrera, Joao Duraes and Marco Vieira.

- **Adaptive Testing of Nondeterministic Systems with FSM.** Alexandre Petrenko and Nina Yevtushenko. (Short Paper)

- **Verifying the Precedence Property Pattern Using the B Method.** Amel Mammar and Marc Frappier. (Short Paper)

- **Using Flash to Tolerate Track Failures in RAID.** Zheng Chen and Allen McBride. (Fast Abstract)

Saturday – January 11, 2014

Keynote – *Tiffany Ballroom*

Infrastructure and Security Considerations to Leverage Performance on Aeronautical Communications System

Declan Byrne

WiMAX Forum.

10:30 – 12:00

Session 6A: Privacy and Safety - *Tiffany I*
Session Chair: Bojan Cukic, *West Virginia University, USA*

- **PriDaC: Privacy Preserving Data Collection in Sensor Enabled RFID Based Healthcare Services.** Farzana Rahman, Drew Williams, Sheikh I. Ahamed, Ji-Jiang Yang and Qing Wang.

- **Recommender Systems for Privacy Management: A Framework.** Curtis Rasmussen and Rozita Dara. (Fast Abstract)

- **The Nature and Content of Safety Contracts.** Patrick Graydon and Iain Bate. (Fast Abstract)

- **Functional Alarms for Systems of Interoperable Medical Devices.** Krishna K. Venkatasubramanian, Eugene Y. Vasserman, Oleg Sokolsky and Insup Lee. (Fast Abstract)

Session 6B: Model Analysis - *Tiffany II*
Session Chair: Andrew Allen, Georgia Southern University, USA

- **Inferring Approximated Models for Systems Engineering.** Alexandre Petrenko, Keqin Li, Roland Groz, Karim Hossen and Catherine Oriat. (Short Paper)

- **Zero-Knowledge Evaluation of Service Performance Based on Simulation.** Claudio A. Ardagna, Ernesto Damiani, Kouessi A.R. Sagbo and Fulvio Frati. (Short Paper)

- **Ordering Upgrade Changes for Highly Available Component Based Systems.** Ali Davoudian, Ferhat Khendek and Maria Toeroe. (Fast Abstract)

- **Modeling the Interaction of Power Line and SCADA Networks.** Yuki Matsui, Hideharu Kojima and Tatsuhiro Tsuchiya. (Fast Abstract)

Social Events

Welcome Reception
Wednesday, January 8, 2014 @ 18:00 hrs
Location: *Ocean Reef*

Conference Banquet and Awards Ceremony
Friday, January 10, 2014 @ 19:00 hrs
Location: *Ocean Reef*

Food and Drinks

Breakfast, morning break, lunch and evening break will be provided by the conference on Thursday and Friday. Breakfast and morning break will be provided on Saturday.

Each attendee has two tickets for drinks at the reception. Hors d 'oeuvres will be served at the reception and there will be a carving station.

Each attendee has two tickets for drinks at the banquet.

For those who indicated on their registration special meal requests, preparations will be available at meal time to address specific needs.

Notes

Notes

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