



Resilience Week 2013

Transforming the
Resilience of Cognitive,
Cyber-physical Systems

August 13-15, 2013

Tuesday, August 13 - Tutorials & Workshops

7:30 a.m.	Coffee and Registration (<i>Grand Ballroom Foyer</i>)			
8:00 a.m.	Opening Welcome: Shankar Sastry, University of California, Berkeley (<i>Grand Ballroom</i>)			
8:15 a.m.	Introductions and Logistics: Jodi Grgich (<i>Grand Ballroom</i>)			
	CONTROL	COGNITIVE	CYBER	COMMUNICATION
8:30 a.m.	Keynote: Piero Bonissone, General Electric Global Research (<i>Mason I/II</i>)	Keynote: Kyle Hultgren, Center for Medication Safety Advancement (<i>Columbus I/II</i>)	Keynote: Vipin Swarup, MITRE (<i>Jackson</i>)	Open to attend keynotes
9:30 a.m.	Morning Break			
10:00 a.m.	Control Session 1a: <i>Mason I/II</i> Cyber Security for Industrial Control Systems Chair: Frank Ferrese, NSWC	Control Session 1b: <i>Montgomery</i>	Cognitive Session 1: <i>Columbus I/II</i> Concepts and Processes of Resilient Cognitive Operations (<i>Columbus I/II</i>) Chair: Barrett Caldwell, Purdue University	Cyber Session 1: <i>Jackson</i> Cyber Resilience Theory Chair: Nick Multari, PNNL
	Communication Session 1: <i>Pine</i> Learning from Disasters: Sandy, Communciations, and Manifold Resiliency Chair: Juan Deaton, INL			
11:30 a.m.	Hosted Lunch with Plenary Speaker: Norman Whitaker, DARPA (<i>Grand Ballroom</i>)			
1:00 p.m.	Test-Driven Development of Physics- Based Models Chair: Frank Ferrese, NSWC	ReSia Technical Committee Chairs: Milos Manic U of Idaho Craig Rieger, INL	Teams in Resilient Performance Settings Chair: Ron Boring, INL	Cyber Resilience Applications Chair: Marco Carvalho, Florida Institute of Technology
	Resilience, Survivability and Disruption Tolerance for the Future Internet and Global Information Grid Chair: Juan Deaton, INL			
2:30 p.m.	Afternoon Break			
3:00 p.m.	Resilient Consensus Control of Dynamic Systems Chair: Frank Ferrese, NSWC	ReSia Technical Committee (Cont.) Chairs: Milos Manic, Craig Rieger	History of Resilience Metrics Discussion Chair: Barrett Caldwell, Purdue University	Cyber Resilience Metrics Chair: Sean Peiser, UC Davis
	Resilience, Survivability and Disruption Tolerance for the Future Internet and Global Information Grid (Cont.) Chair: Juan Deaton, INL			
4:30 p.m.	Adjourn			

Wednesday, August 14 - Papers & Presentations

7:30 a.m.	Coffee and Registration (Grand Ballroom Foyer)						
8:00 a.m.	Opening Remarks and Daily Agenda: Jodi Grgich (Grand Ballroom)						
	CONTROL		COGNITIVE		CYBER		COMMUNICATION
8:30 a.m.	Keynote: Massoud Amin, University of Minnesota (Mason I/II)		Keynote: Stephen Rottler, Sandia National Laboratories (Columbus I/II)		Keynote: Thomas Longstaff, National Security Agency (Jackson)		Keynote: Rangam Subramanian, Idaho National Laboratory (Pine)
9:30 a.m.	Morning Break						
10:00 a.m.	Control Session 1a: <i>Mason I/II</i> Complex Networked Control Systems Chair: Chika Nwankpa, Drexel University	Control Session 1b: <i>Montgomery</i> Sensor Design / Networks Chair: Li Bai, Temple University	Control Session 2: <i>Washington</i> Mixed Initiative Response Chair: Zaruhi Mnatsakanyan, Johns Hopkins University	Cognitive Session 1: <i>Columbus I/II</i> Path to Autonomous, Resilient Systems Chair: David Woods, The Ohio State University	Resilient Cyber Systems: <i>Jackson</i> Chair: Marco Carvalho, FIT	Systems Intelligence for Resilience: <i>Sansome</i> Chair: Dipankar Dasgupta, Memphis University	Communication Session 1: <i>Pine</i> Efficient Resilient Communication in Error-prone Wireless Networks Chair: Juan Deaton, INL
11:30 a.m.	Hosted Lunch with Plenary Speaker: Dane Egli, The Johns Hopkins University (Grand Ballroom) <i>Sponsored by TRUST, UC Berkeley</i>						
1:00 p.m.	Complex Networked Control Systems Chair: Chika Nwankpa, Drexel University	Data Fusion Chair: Jeff Bradshaw, Florida Institute for Human & Machine Cognition	Complex Networked Control Systems Chair: Frank Ferrese, NSWC	Path to Autonomous, Resilient Systems Chair: David Woods, The Ohio State University	Resilient Cyber Systems Chair: Marco Carvalho, FIT	Cyber Resilience Theory Chair: Nick Multari, PNNL	Communication Session 2 Chair: Juan Deaton, INL
2:30 p.m.	Afternoon Break						
3:00 p.m.	Poster Session				Resilient Cyber Systems Chair: Marco Carvalho, FIT	Cyber Resilience Theory Chair: Nick Multari, PNNL	
4:30 p.m.	Adjourn						
6:00 p.m.	Hoster Dinner with Plenary Speaker Declan Ganley, Rivada Networks (The Dining Room)						

Thursday, August 15 - Panel Discussions

7:30 a.m.	Coffee and Registration <i>(Grand Ballroom Foyer)</i>			
8:00 a.m.	Opening Remarks and Daily Agenda: Jodi Grgich <i>(Grand Ballroom)</i>			
	CONTROL	COGNITIVE	CYBER	COMMUNICATION
8:30 a.m.	Keynote: David Scheidt, Johns Hopkins University APL <i>(Mason I/II)</i>	Open to attend keynotes	Keynote: Doug Tygar, UC Berkeley <i>(Grand Ballroom)</i>	Open to attend keynotes
9:30 a.m.	Morning Break			
10:00 a.m.	Panel Discussion - open to all attendees <i>(Grand Ballroom)</i> Moderator: Juan Deaton (Idaho National Laboratory) Declan Ganley (Rivada Networks), Dave Hutchison (Lancaster University), David Woods (Ohio State University), Li Bai (Temple University), Marco Carvalho (Florida Institute of Technology)			
11:30 a.m.	Concluding Remarks: Craig Rieger, Idaho National Laboratory			
11:40 a.m.	Adjourn			
1:30 p.m.	Tour - UC Berkeley <i>(Optional)</i>			
3:30 p.m.	End of Tour			

Symposia: Control

Control Systems At-A-Glance

Tuesday, August 13 - Tutorials & Workshops

8:30 a.m.	Keynote: Piero Bonissone, General Electric Global Research (<i>Mason I/II</i>)	
9:30 a.m.	Morning Break	
10:00 a.m.	Control Session 1a: <i>Mason I/II</i> Chair: Frank Ferrese, US Navy NAVSEA	Control Session 1b: <i>Montgomery</i>
	Cyber Security for Industrial Control Systems - Wayne Cantrell, Siemens Corporation	Open
11:30 a.m.	Hosted Lunch with Plenary Speaker: Norman Whitaker, DARPA (<i>Grand Ballroom</i>)	
1:00 p.m.	Test-driven Development of Physics-based Models - Damian Rouson, Sourcery, Inc.	ReSia Technical Committee Chairs: Milos Manic, U of I and Craig Rieger, INL
2:30 p.m.	Afternoon Break	
3:00 p.m.	Resilient Consensus Control of Dynamic Systems - Saroj Biswas, Temple University	ReSia cont.
4:30 p.m.	Adjourn	

Wednesday, August 14 - Papers & Presentations

8:30 a.m.	Keynote: Massoud Amin, University of Minnesota (<i>Mason I/II</i>)		
9:30 a.m.	Morning Break		
10:00 a.m.	Complex Networked Control Systems: <i>Mason I/II</i> Chair: Chika Nwankpa, Drexel University	Sensor Design / Networks: <i>Montgomery</i> Chair: Li Bai, Temple University	Mixed Initiative Response: <i>Washington</i> Chair: Zaruhi Mnatsakanyan, Johns Hopkins University
	Infrastructure Resilience Using Cyber-Physical Game Theoretic Approach - Nageswara Rao, ORNL	Resilient Monitoring System for Boiler/Turbine Plant - Seymon Meerkov, University of Michigan	Non-Destructive State Machine Reverse Engineering - Jessica Smith, PNNL
10:30 a.m.	A Mathematical Framework for the Analysis of Cyber-Resilient Control Systems - Alexander Melin, ORNL		A Micro-Grid Simulator Tool (SGridSim) using Effective Node-to-Node Complex Impedance (EN2NCI) Models - Udhay Ravishankar, U of I

11:00 a.m.	Multi-Objective Consensus of Interconnected System of Multi-Agent Systems - Saroj Biswas, Temple University	Inclusion of Game-Theoretic Formulations for Resilient Condition Assessment Monitoring - Humberto Garcia, INL	
11:30 a.m.	Hosted Lunch with Plenary Speaker: Dane Egli, The Johns Hopkins University (Grand Ballroom) Sponsored by TRUST, UC Berkeley		
	Complex Networked Control Systems Chair: Chika Nwankpa, Drexel University	Data Fusion Chair: Jeff Bradshaw, Florida Institute for Human & Machine Cognition	Complex Networked Control Systems Chair: Frank Ferrese, NSWCC
1:00 p.m.	On Analysis and Design of Stealth-Resilient Control Systems - Shaunak Bopardikar, UTRC	Computational Intelligence Based Data Fusion Algorithm for Dynamic sEMG and Skeletal Muscle Force Modelling - Chandrasekhar Potluri, ISU	Resilient Control of Cyber-Physical Systems against Denial-of-Service Attacks - Yuan Yuan, Tsinghua University
1:30 p.m.	Distributed Fuzzy Logic Price Negotiation in Market Based Mutli-agent Control - Li Bai, Temple University	Fuzzy Linguistic Knowledge Based Behavior Extraction for Building Energy Management Systems - Dumidu Wijayasekara, U of I	Variations of Converter's Control Parameters and its Effects on DC Multi-Converter Power Systems - Chika Nwankpa, Drexel
2:00 p.m.	A Hierarchical Multi-Agent Dynamical System Architecture for Resilient Control Systems - Quanyan Zhu, U. Illinois, UC		
2:30 p.m.	Afternoon Break		
3:00 p.m.	Poster Session		
4:30 p.m.	Adjourn		
6:00 p.m.	Hoster Dinner with Plenary Speaker: Declan Ganley, Rivada Networks (The Dining Room)		

Thursday, August 15 - Panel Discussions

8:30 a.m.	Keynote: David Scheidt, Johns Hopkins University APL (Mason I/II)
10:00 a.m.	Panel Discussion - open to all attendees (Grand Ballroom)
1:30 p.m.	Tour - UC Berkeley (Optional)

Symposia: Cognitive

Cognitive Systems At-A-Glance

Tuesday, August 13 - Papers & Presentations

8:30 a.m.	Keynote: Kyle Hultgren, Center for Medication Safety Advancement (<i>Columbus I/II</i>)
9:30 a.m.	Morning Break
	Cognitive Session 1: <i>Columbus I/II</i> Concepts and Processes of Resilient Cognitive Operations Chair: Barrett Caldwell, Purdue University
10:00 a.m.	Is Performance Variability Necessary? A Qualitative Study on Cognitive Resilience in Forestry Work - Jennifer Colman and Heather Kahle, WorkSafeBC
10:30 a.m.	Considering Quantitative Metrics for Resilience - Barrett Caldwell, Purdue University
11:00 a.m.	Process for Control Room Modernization Using Digital Control Systems at Nuclear Power Plants - Ron Boring, Idaho National Laboratory
11:30 a.m.	Hosted Lunch with Plenary Speaker: Norman Whitaker, DARPA (<i>Grand Ballroom</i>)
	Teams in Resilient Performance Settings Chair: Ron Boring, Idaho National Laboratory
1:00 p.m.	Resilience in Robot-Assisted Surgical Teams - E. Asher Balkin , The Ohio State University
1:30 p.m.	Robust Flight Deck Systems: Harnessing the Synergistic Power of the Crew - Mike Stasio, United Airlines
2:00 p.m.	Differences in Trust Between Two Types of Alarms and Events within a Nuclear Plant and Control Simulation - Ron Boring, Idaho National Laboratory
2:30 p.m.	Afternoon Break
3:00 p.m.	Quantitative Modeling of Social Systems Dynamics and Resilience Prior to 1990: Lessons for Today - Barrett Caldwell, Purdue University
4:30 p.m.	Adjourn

Wednesday, August 14 - Tutorials & Workshops

8:30 a.m.	Keynote: Stephen Rottler, Sandia National Laboratories (<i>Columbus I/II</i>)
9:30 a.m.	Morning Break
	Cognitive Session 1: <i>Columbus I/II</i> Chair: David Woods, The Ohio State University
10:00 a.m.	Path to Autonomous, Resilient Systems - John Doyle, Caltech David Woods, The Ohio State University
11:30 a.m.	Hosted Lunch with Plenary Speaker: Dane Egli, The Johns Hopkins University (<i>Grand Ballroom</i>) Sponsored by TRUST, UC Berkeley
1:00 p.m.	Path to Autonomous, Resilient Systems - Doyle/Woods cont.
2:30 p.m.	Afternoon Break
3:00 p.m.	Poster Session
4:30 p.m.	Adjourn
6:00 p.m.	Hoster Dinner with Plenary Speaker: Declan Ganley, Rivada Networks (<i>The Dining Room</i>)

Thursday, August 15 - Panel Discussions

10:00 a.m.	Panel Discussion - open to all attendees (<i>Grand Ballroom</i>)
1:30 p.m.	Tour - UC Berkeley (<i>Optional</i>)

Symposia: Cyber Systems

Cyber Systems At-A-Glance

Tuesday, August 13 - Tutorials & Workshops

8:30 a.m.	Keynote: Vipin Swarup, MITRE (<i>Jackson</i>)
9:30 a.m.	Morning Break
10:00 a.m.	Cyber Session 1: <i>Jackson</i> Chair: Marco Carvalho, Florida Institute of Technology
	Cyber Resilience Theory - Nick Multari and Chris Oehmen, Pacific Northwest National Laboratory
11:30 a.m.	Hosted Lunch with Plenary Speaker: Norman Whitaker, DARPA (<i>Grand Ballroom</i>)
1:00 p.m.	Cyber Resilience Frameworks and Applications - Deb Bodeau, MITRE
2:30 p.m.	Afternoon Break
3:00 p.m.	Cyber Resilience Metrics - Marco Carvalho, Florida Institute of Technology and Sean Peisert, UC Davis
4:30 p.m.	Adjourn

Wednesday, August 14 - Papers & Presentations

8:30 a.m.	Keynote: Thomas Longstaff, National Security Agency (<i>Jackson</i>)	
9:30 a.m.	Morning Break	
	Resilient Cyber Systems: <i>Jackson</i> Chair: Marco Carvalho, Florida Institute of Technology	Systems Intelligence for Resilience: <i>Sansome</i> Chair: Dipankar Dasgupta, University of Memphis
10:00 a.m.	The language of behavior: Exploring a new formalism for resilient response - Glenn Fink, PNNL	Information Security Analysis for CKMS Using Game Theory and Simulation - Rick Sheldon, ORNL
10:30 a.m.	Towards Improved Detection of Attackers in Computer Networks: New Edges, Fast Updating, and Host Agents - John Neil, LANL	Modeling and Cyber Security Vulnerabilities Analyzing for Smart Grid Transmission Subsystem - Yi Deng, Virginia Tech
11:00 a.m.	A Command and Control Framework for Moving Target Defense and Cyber Resilience - Marco Carvalho, FIT	Adaptive Selection of Multi-Factor Modalities for Continuous Authentication - Dipankar Dasgupta- University of Memphis

11:30 a.m.	Hosted Lunch with Plenary Speaker: Dane Egli, The Johns Hopkins University (Grand Ballroom) Sponsored by TRUST, UC Berkeley	
	Resilient Cyber Systems (<i>Jackson</i>) Chair: Marco Carvalho, FIT	Cyber Resilience Theory (<i>Sansome</i>) Chair: Nick Multari, PNNL
1:00 p.m.	Statistical detection of malicious web sites through time proximity to existing detection events - Alexander Kent, LANL	Supply Chain Integration for Integrity: Policy and architecture for built-in supply chain integrity of trusted components - Rick Sheldon, ORNL
1:30 p.m.	Scalable Machine Learning Framework for Behavior-Based Access Control - Michael Atighetchi, Raytheon BNN Tech.	Increasing Cyber System Resilience Through Predictability-Based Defense - Rich Colbaugh, Sandia National Laboratory
2:00 p.m.	A Combined Discriminative and Generative Behavior Model for Cyber Physical System Defense - Owen McCusker, Sonalysts, Inc.	Metrics and Analysis Techniques for Cyber Defensibility, Resiliency, and Security: Looking Across Different Evaluation Environments - Bill Heinbockel, MITRE
2:30 p.m.	Afternoon Break	
3:00 p.m.	Simulation Tool for Evaluation and Design of Resilience Strategies - Dung Lam, University of Texas, Austin	Towards a Unified Theoretical Framework for Reconstitution of Cyber Systems - Mahantesh Halappanavar, PNNL
	Cooperation Models Between Humans and Artificial Self-Organizing Systems: motivations, issues, and perspectives - Gabriel Rey, PUJ	Measuring Success in Complex System Models using Formal Concept Analysis and Probability Models - Jennifer Davidson, Iowa State
4:00 p.m.	Poster Session	
4:30 p.m.	Adjourn	
6:00 p.m.	Hoster Dinner with Plenary Speaker: Declan Ganley, Rivada Networks (<i>The Dining Room</i>)	

Thursday, August 15 - Panel Discussions

8:30 a.m.	Keynote: Doug Tygar, UC Berkeley (<i>Grand Ballroom</i>)
10:00 a.m.	Panel Discussion - open to all attendees (<i>Grand Ballroom</i>)
1:30 p.m.	Tour - UC Berkeley (<i>Optional</i>)

Symposia- Communications

Communication Systems At-A-Glance

Tuesday, August 13 - Tutorials & Workshops

8:30 a.m.	Open to attend keynotes
9:30 a.m.	Morning Break
10:00 a.m.	Communication Tutorials: <i>Pine</i> Chair: Juan Deaton, Idaho National Laboratory
	Learning from Disasters: Sandy, Communications, and Manifold Resiliency - Lee Vinsel, Steven Institute
11:30 a.m.	Hosted Lunch with Plenary Speaker: Norman Whitaker, DARPA (<i>Grand Ballroom</i>)
1:00 p.m.	Resilience, Survivability, and Disruption Tolerance for the Future Internet and Global Information Grid - James Sterbenz, University of Kansas
2:30 p.m.	Afternoon Break
3:00 p.m.	James Sterbenz cont.
4:30 p.m.	Adjourn

Wednesday, August 14 - Papers & Presentations

8:30 a.m.	Keynote: Rangam Subramanian, Idaho National Laboratory (<i>Pine</i>)
9:30 a.m.	Morning Break
10:00 a.m.	Communication Session 1: <i>Pine</i> Chair: Juan Deaton, Idaho National Laboratory
	Efficient and Resilient Communication in Error-prone Wireless Networks - Jie Wu, Temple University
11:30 a.m.	Hosted Lunch with Plenary Speaker: Dane Egli, The Johns Hopkins University (<i>Grand Ballroom</i>) Sponsored by TRUST, UC Berkeley
1:00 p.m.	Communication Session 2 Space-polarization MIMO Testbed - Jun Chen, University of Notre Dame
1:30 p.m.	Throughput and Fairness-Aware Dynamic Network Coding in Wireless Communication Networks - Pouya Ostovari, Temple University
2:30 p.m.	Afternoon Break
3:00 p.m.	Poster Session
4:30 p.m.	Adjourn
6:00 p.m.	Hoster Dinner with Plenary Speaker: Declan Ganley, Rivada Networks (<i>The Dining Room</i>)

Thursday, August 15 - Panel Discussions

10:00 a.m.	Panel Discussion - open to all attendees (<i>Grand Ballroom</i>)
1:30 p.m.	Tour - UC Berkeley (<i>Optional</i>)