



Safe and Secure Systems and Software Symposium(S5)

As of 1450EDT, 16 June 2017

Day 1		S5 Agenda – Tuesday, 01 Aug 2017	
0730-0800		Check-in	
0800-0815		Welcome and Administrative Remarks	
0815-0845			Keynote: TBD
0845-0905		Topic Area Overview & Motivation <i>Dr. Derek Kingston, AFRL/RQQA VVCAS Team</i>	
0905-0920		BREAK ☕ (15 min)	
0920-0950	7	Overview of Ongoing Autonomy TEVV Efforts and the Way Forward <i>Dr. David Scheidt, Weather Gage Technologies, LLC</i>	
0950-1020	7	Early Planning and Execution for Evidence-Based Operational Readiness Credentials in the Acquisition Life-Cycle: Lessons Learned and Recommendations <i>Kevin Carter (Colsa), Paul Salchak (Air Force Life Cycle Management Center)</i>	
1020-1050	7	Toward an Autonomous System Development, Test, and Evaluation Ecosystem <i>Dr. Patrick J. Martin, BAE Systems - Technology Solutions</i>	
1050-1105		BREAK ☕ (15 min)	
1105-1135	8	Architectural Modeling and Analysis of a Geofence Application <i>Dr. Jennifer Davis, Rockwell Collins</i>	
1135-1205	8	Integrating Run-Time and Design-Time Assurance for AOS (Autonomy Operating System) <i>Dr. Michael Lowry, NASA Ames</i>	
1205-1335		LUNCH 🍴🍷 (on your own)	
1335-1405	2	Using SpeAR to satisfy DO-178C Requirements <i>Lucas Wagner, Rockwell Collins</i>	
1405-1435	2	Demonstrating the Need for Novel V&V Tools Over Solely More Modeling, Simulation, and Test <i>Dr. Christopher Elliott, Lockheed Martin Aeronautics – Skunk Works</i>	
1435-1505	2	Architecture-based design and analysis with BIP <i>Anastasia Mavridou, Vanderbilt University</i>	
1505-1520		BREAK ☕ (15 min) & Poster Setup	
1520-1550	2	Quality-of-Service-Oriented Architectures for Cyber-Physical Systems <i>Marilyn Wolf, Georgia Institute of Technology</i>	
1550-1620	2	Designing a Modeling Framework for Autonomous Course of Action Selection <i>Lauren Hinkle, Charles River Analytics</i>	
1620-1800		Poster Session & Networking Event <i>Salon C & D</i>	



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Day 2		S5 Agenda – Wednesday, 02 Aug 2017	
0730-0800		Sign-in at Registration Desk and Poster Setup in Salon C&D	
0800-0805		Welcome and Administrative Remarks	
0805-0835			Keynote: TBD
0835-0905	2	Asserting Controller Robustness and Safety of Unmanned Aircraft Systems <i>Mr. J. Micah Fry, Virginia Tech</i>	
0905-0935	2	Using Formal Methods to Reason About Neural Network Based Autonomous Systems <i>Dr. Stephen Magill, Galois, Inc.</i>	
0935-0950		BREAK ☕ (15 min)	
0950-1020	4	Proving Functional Correctness with the Software Analysis Workbench <i>Aaron Tomb, Galois, Inc.</i>	
1020-1050	4	An Automated Approach to Object Code Verification <i>Shan Bhattacharya, LDRA Technology</i>	
1050-1200		Poster Session <i>Salon C & D</i>	
1200-1330		LUNCH 🍴🥗 (on your own)	
1330-1400	1	Traceability Support for Evolving Safety Assurance Cases <i>Jane Cleland-Huang and Robyn Lutz, University of Notre Dame; Iowa State University</i>	
1400-1430	1	Improving the Verification Awareness of Autonomous Systems <i>Rose F. Gamble, University of Tulsa</i>	
1430-1500	1	Modeling Incremental Autonomy of a UAS in Support of Reasoning About Applicable Assurance Methods <i>Dr. Jonathan Rowanhill, Dependable Computing LLC</i>	
1500-1515		BREAK ☕ (15 min)	
1515-1545	3	Computer-aided Design for Safe Autonomous Vehicles <i>Rahul Mangharam, University of Pennsylvania</i>	
1545-1615	9	The One-Out-Of-m Multicore Problem <i>James H. Anderson, The University of North Carolina at Chapel Hill</i>	
1615-1630		BREAK ☕ (15 min)	
1630-1700	5	Use of Controls Approaches for Verification, Validation and Certification of Distributed Mission Management Controls for Unmanned Systems <i>Kayin Cannon, Northrop Grumman Aerospace Systems</i>	
1700-1730	5	Mathematical/Formal Approaches to Assuring Software Behavior towards UAV System Certification <i>Bill Sebring / Dr. Prakash Sarathy, Northrop Grumman Aerospace Systems</i>	
1730-1730		Closing Remarks	
1730-1930		No-Host Social	



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Come join us on the 3rd day to hear about AFRL's Summer of Innovation Project!

The Summer of Innovation project is a partnership with the Air Force Research Laboratory, Wright Brothers Institute, and approximately 16 other contracted partners from academia, government, and industry. The project is modeled after the "Google Summer of Code" program, a 14-week "innovation workshop" with a team of experts in Formal Methods and software design. The teams have been working with AFRL's open source version of their Unmanned Systems Autonomy Services architecture (UxAS) which contains approximately 50 state of the art cooperative control, path planning and surveillance software services.

Day 3	S5 Agenda – Thursday, 03 Aug 2017
0730-0800	Sign-in at Registration Desk
0800-0805	Welcome and Administrative Remarks
0805-0835	What is AFRL's Summer of Innovation? <i>Matt Clark / Dr. Derek Kingston, AFRL/RQQA</i>
0835-0905	Argument Group
0905-0935	Requirements Group
0935-1005	BREAK ☕ (30 min)
1005-1035	System Safety Group
1035-1105	Architecture Group
1105-1135	Real-time / Middleware Group
1135-1305	LUNCH 🍴🍷 (on your own)
1305-1335	Run-time Assurance Group
1335-1405	Hybrid Systems Group
1405-1435	Task / Service Planning Group
1435-1505	BREAK ☕ (30 min)
1505-1535	Mission Planning Group
1535-1605	Testing Group
1605-1635	Wrap-up
1635-1635	Closing Remarks



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Poster Session

Automatically Support Generation and Maintenance of An Assurance Case

Chung-Ling Lin, Western Michigan University

GPCA Requirements in SpeAR A Case Study

Tony Aiello, Dependable Computing, LLC

Bi-Directional Requirements Traceability, Software Re-use and Iterative Development Practices

Shan Bhattacharya, LDRA Technology

Leveraging a Comprehensive Tool Suite to Ensure Safety and Security in UAS Development

Shan Bhattacharya, LDRA Technology

WebGME-BIP: A Design Studio for Modeling, Analyzing, and Generating Systems with BIP

Anastasia Mavridou, Vanderbilt University

V&V Approaches for Certification of Unmanned Systems

John C. Lee, Northrop Grumman Aerospace Systems

Testing Robustness of UAS Technology (TRUST)

John A. Sauter, Soar Technology

A Risk-aware A* Algorithm for Resilient Mission Plans

Rose F. Gamble, University of Tulsa

Drone Forensics: A Preliminary Flight Log Analysis of Micro Drones

Ankit L. P. S Renduchintala, University of Toledo

Integrating Advanced V&V Approaches into Industrial Product Development Processes

Michael Nolan, Raytheon IV&V Technology Interest Group Co-chair

Examination of Gain Scheduling and Fuzzy Controllers with Hybrid Reachability

Aaron Fifarek, LinQuest Corporation