



# The 47<sup>th</sup> Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2017)

## Preliminary Program

Monday, June 26, 2017				
8:00 – 17:00	Registration			
8:30 – 10:00	<u>SSIV Workshop</u> The 3rd International Workshop on Safety and Security of Intelligent Vehicles	<u>RADIANCE Workshop</u> International Workshop on Recent Advances in the Dependability Assessment of Complex systems	<u>Tutorial 1</u> A practical view of modeling and quantification of network survivability	
10:00 – 10:30	Coffee Break			
10:30 – 12:00	SSIV Workshop	RADIANCE Workshop	Tutorial 1	
12:00 – 13:30	Lunch			
13:30 – 15:00	SSIV Workshop	RADIANCE Workshop	Tutorial 1	<u>Tutorial 2</u> LLFI and the Art of Fault Injection
15:00 – 15:30	Coffee Break			
15:30 – 17:00	SSIV Workshop	RADIANCE Workshop	Tutorial 1	Tutorial 2
17:30 – 19:30	Conference Reception			

Tuesday, June 27, 2017	
8:00 – 17:00	<b>Registration</b>
8:30 – 9:15	Location: Opening remarks and Jean-Claude Laprie award presentation
9:15 – 10:15	<p><u>Keynote I</u></p> <p>Farnam Jahanian, University Provost and Chief Academic Officer, Carnegie Mellon University</p> <p>Talk title:</p> <p>Location:</p> <p>Chair:</p>
10:15 – 10:45	<b>Coffee Break</b>

	<p><u>Session 1</u>: Best paper award nominees</p> <p><u>Location</u>:</p> <p><u>Chair</u>: Pascal Felber and Evgenia Smirni</p> <p><b>Information Leakage in Encrypted Deduplication via Frequency Analysis</b> Jingwei Li (University of Electronic Science and Technology of China); Chuan Qin, Patrick P. C. Lee (The Chinese University of Hong Kong); Xiaosong Zhang (University of Electronic Science and Technology of China)</p> <p><b>Privacy Disclosure Through Smart Meters: Reactive Power Based Attack and Defense</b> Jingyao Fan (The Pennsylvania State University); Qinghua Li (University of Arkansas); Guohong Cao (The Pennsylvania State University)</p> <p><b>What Can We Learn from Four Years of Data Center Hardware Failures?</b> Guosai Wang, Wei Xu (Institute for Interdisciplinary Information Sciences, Tsinghua University)</p>
10:45 – 12:15	
12:15 – 13:45	<b>Lunch</b>

13:45 – 15:15	<p><u>Session 2A: Algorithms and Agreement</u></p> <p><u>Location:</u> <u>Chair:</u> Paulo Verissimo</p> <p><b>Fast Atomic Multicast</b> Paulo Coelho (University of Lugano); Nicolas Schiper (EPFL); Fernando Pedone (University of Lugano)</p> <p><b>Speeding up Consensus by Chasing Fast Decisions</b> Balaji Arun, Sebastiano Peluso, Roberto Palmieri, Giuliano Losa, Binoy Ravindran (Virginia Tech)</p> <p><b>Secure Causal Atomic Broadcast, Revisited</b> Sisi Duan (Oak Ridge National Laboratory); Michael K. Reiter (University of North Carolina at Chapel Hill); Haibin Zhang (University of Connecticut)</p>	<p><u>Session 2B: Hardware</u></p> <p><u>Location:</u> <u>Chair:</u> Devesh Tiwari</p> <p><b>Reducing the “Tax” of Reliability: A Hardware-Aware Method for Agile Data Persistence in Mobile Devices</b> Meng Wang, Huxiang Chen (University of Florida); Tao Li (NSF/University of Florida)</p> <p><b>Exploring the Potential for Collaborative Data Compression and Hard-Error Tolerance in Resistive Memories</b> Amin Jadidi, Mohammad Arjomand (Pennsylvania State University); Mohammad Khavari Tavana, David Kaeli (Northeastern University); Mahmut Kandemir, Chita Das (Pennsylvania State University)</p> <p><b>One Bit is (Not) Enough: An Empirical Study of the Impact of Single and Multiple Bit-Flip Errors</b> Behrooz Sangchoolie (Chalmers University of Technology); Karthik Pattabiraman (University of British Columbia); Johan Karlsson (Chalmers University of Technology)</p>	<p><u>Session 2C: Fast abstract</u></p> <p><u>Location:</u> <u>Chair:</u> Matti Hiltunen</p>
15:15 – 15:45	Coffee Break		

15:45 – 17:15	<p><u>Session 3A: Symbolic Execution and Synthesis Tools</u></p> <p><u>Location:</u> <u>Chair:</u> Gilles Muller</p> <p><b>StatSym: Vulnerable Path Discovery through Statistics-guided Symbolic Execution</b> Fan Yao, Yongbo Li, Yurong Chen, Hongfa Xue, Guru Venkataramani, Tian Lan, (The George Washington University)</p> <p><b>Dependability-aware design space exploration for optimal synthesis parameters tuning</b> Ilya Tuzov, Juan Carlos Ruiz, David de Andres (ITACA-UPV)</p> <p><b>pbSE: Phase-based Symbolic Execution</b> QixueXiao, YuChen (Tsinghua University); ChenggangWu (Institute of Computing Technology Chinese Academy of Sciences); KangLi (Dept. of Computer Science Athens, Georgia)</p>	<p><u>Session 3B: Trusted Execution</u></p> <p><u>Location:</u> <u>Chair:</u> Bojan Cukic</p> <p><b>IM-Visor: A Pre-IME Guard to Prevent IME Apps from Stealing Sensitive Keystrokes Using TrustZone</b> Chen Tian, Yazhe Wang (State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences); Peng Liu (College of Information Sciences and Technology, Pennsylvania State University, University Park); Qihui Zhou, Chengyi Zhang (State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences)</p> <p><b>Rollback and Forking Detection for Trusted Execution Environments using Lightweight Collective Memory</b> Marcus Brandenburger, Christian Cachin (IBM Research - Zurich); Matthias Lorenz, Rüdiger Kapitza (TU Braunschweig)</p> <p><b>Secure Tera-scale Data Crunching with a Small TCB</b> Bruno Vavala (Carnegie Mellon University (U.S.) &amp; University of Lisbon (Portugal)); Nuno Neves (University of Lisbon (Portugal)); Peter Steenkiste (Carnegie Mellon University (U.S.))</p>	<p><u>Session 3C: Industry Track I: Architecture and Evaluation of (Dependable) Systems and Networks</u></p> <p><u>Location:</u> <u>Chair:</u> Cristian Constantinescu</p> <p>Invited Talk: Robert Baumann, Texas Instruments</p> <p><b>RT Level vs. Microarchitecture Level Reliability Assessment: Case Study on ARM Cortex-A9 CPU</b> Athanasios Chatzidimitriou, Manolis Kaliorakis, Dimitris Gizopoulos, Maurizio Iacaruso, Mauro Pipponzi, Riccardo Mariani and Stefano Di Carlo.</p> <p><b>Exact Reliability Computation</b> Thanikesavan Sivanthi, Yvonne-Anne Pignolet and Vincent Débieux.</p>
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## Wednesday, June 28, 2017

8:00 – 17:00	<b>Registration</b>		
8:30 – 9:30	<p style="text-align: center;"><u>Keynote II</u></p> <p style="text-align: center;">Bryan Salesky, CEO, Argo AI</p> <p>Talk title: Location: Chair:</p>		
9:30 – 10:00	Carter Award Presentation		
10:00 – 10:30	<b>Coffee Break</b>		
10:30 – 12:00	<p style="text-align: center;"><u>Session 4A:</u> Binaries</p> <p><u>Location:</u> <u>Chair:</u> Saman Zonouz</p> <p>Practical Experience Report <b>Concolic Execution on Small-Size Binary Codes: Challenges and Empirical Study</b> Hui Xu (CUHK); Yangfan Zhexceou, Yu Kang (Fudan University); Michael R Lyu (CUHK)</p> <p><b>Towards Automated Discovery of Crash-Resistant Primitives in Binaries</b> Benjamin Kollenda (Ruhr-Universität Bochum); Enes Goktas (Vrije Universiteit Amsterdam); Tim Blazytko, Philipp Koppe, Robert Gawlik (Ruhr-Universität Bochum); R.K. Konoth, Cristiano Giuffrida, Herbert Bos (Vrije Universiteit Amsterdam); Thorsten Holz (Ruhr-Universität Bochum)</p> <p><b>Function Interface Analysis: A Principled Approach for Function Recognition in COTS Binaries</b> Rui Qiao, R Sekar (Stony Brook University)</p>	<p style="text-align: center;"><u>Session 4B:</u> Cloud</p> <p><u>Location:</u> <u>Chair:</u> Fernando Pedone</p> <p><b>Multimodal Indexable Encryption for Mobile Cloud-based Applications</b> Bernardo Ferreira, João Leitão, Henrique Domingos (FCT/UNL &amp; NOVA LINCS)</p> <p><b>Secure Live Migration of SGX Enclaves on Untrusted Cloud</b> Jinyu Gu, Zhichao Hua, Yubin Xia, Haibo Chen (Shanghai Jiao Tong University); Binyu Zang (Shanghai Jiao Tong University); Haibing Guan (Shanghai Jiao Tong University); Jinming Li (Huawei)</p> <p><b>ContainerLeaks: Emerging Security Threats of Information Leakages in Container Clouds</b> Xing Gao (College of William and Mary); Zhongshu Gu, Mehmet Kayaalp, Dimitrios Pendarakis (IBM T.J. Watson Research Center); Haining Wang (University of Delaware)</p>	<p style="text-align: center;"><u>Session 4C:</u> Industry Track II: Cloud Computing and the Internet of Things (IoT)</p> <p><u>Location:</u> <u>Chair:</u> Karthik Pattabiraman</p> <p>Invited talk: Ben Zorn, Microsoft</p> <p><b>Providing Resiliency to Orchestration and Automation Engines in Hybrid Cloud</b> Long Wang, Harigovind Ramasamy, Alexei Karve and Rick Harper.</p> <p><b>Uptime-Optimized Cloud Architecture as a Brokered Service</b> Sreekrishnan Venkiteswaran and Santonu Sarkar.</p>

12:00 – 13:30	<b>Lunch</b>		
13:30 – 15:00	<p><u>Session 5A: Anomaly Detection</u></p> <p><u>Location:</u> <u>Chair:</u> Patrick Lee</p> <p><b>Athena: A Framework for Scalable Anomaly Detection in Software-Defined Networks</b> Seunghyeon Lee, Jinwoo Kim, Seungwon Shin (KAIST); Phillip Porras, Vinod Yegneswaran (SRI International)</p> <p><b>Bloom Filters and LSTM Networks For Multi-level Anomaly Detection in Industrial Control Systems</b> Cheng Feng, Tingting Li, Deepth Chana (Institute for Security Science and Technology, Imperial College London)</p> <p><b>Revisiting Random Walk based Sybil Detection in Online Social Networks</b> Jinyuan Jia, Neil Zhenqiang Gong (Iowa State University)</p>	<p><u>Session 5B: Wireless and Sensors</u></p> <p><u>Location:</u> <u>Chair:</u> Anne Remke</p> <p><b>Towards Secure and Verifiable Database-driven Spectrum Sharing</b> Zhili Chen (Anhui University); Lin Chen (University of Paris-Sud); Hong Zhong (Anhui University)</p> <p><b>Sensor-based Implicit Authentication of Smartphone Users</b> Wei-Han Lee, Ruby Lee (Princeton University)</p> <p><b>REMAX: Reachability-Maximizing P2P Detection of Erroneous Readings in Wireless Sensor Networks</b> Varun Badrinath Krishna, Michael J. Rausch, Benjamin E. Ujcich, Indranil Gupta, William H. Sanders (University of Illinois at Urbana-Champaign)</p>	<p><u>Session 5C: Industry Track III: Dependability Data and Security</u></p> <p><u>Location:</u> <u>Chair:</u> Alan Wood</p> <p><b>Enhancing Anomaly Diagnosis of Automatic Train Supervision System Based on Operation Log</b> Yan Li, Binbin Chen, Vincent W. Zheng, William Temple, Zbigniew Kalbarczyk and Yue Wu.</p> <p><b>Automating DRAM Fault Mitigation By Learning From Experience</b> Elisabeth Baseman, Nathan Debardeleben, Kurt Ferreira, Vilas Sridharan, Taniya Siddiqua and Olena Tkachenko.</p> <p><b>HYDRA: HYbrid Design for Remote Attestation (Using a Formally Verified Microkernel)</b> Karim Eldefrawy, Norrathep Rattanavipanon and Gene Tsudik.</p> <p><b>MAS: Mobile-Apps Assessment and Analysis System</b> Chin-Wei Tien, Chia-Wei Tien, Tse-Yung Huang, Ting-Chun Huang, Wei-Ho Chung and Sy-Yen Kuo</p> <p><b>A Visit to the Jungle of Terminology</b> Algirdas Avizienis</p>
15:00 – 15:30	<b>Coffee Break</b>		

15:30 – 17:00	<p><u>Session 6A: Dependable Systems and Software</u></p> <p><u>Location:</u> <u>Chair:</u> Domenico Cotroneo</p> <p><b>Agora: A Dependable High-Performance Coordination Service for Multi-Cores</b> Rainer Schiekofe (Friedrich-Alexander-Universität Erlangen-Nürnberg); Johannes Behl (TU Braunschweig); Tobias Distler (Friedrich-Alexander-Universität Erlangen-Nürnberg)</p> <p><b>Load-Optimal Local Fast Rerouting for Dependable Networks</b> Yvonne-Anne Pignolet (ABB Research, Switzerland); Stefan Schmid (Aalborg Uni, Denmark &amp; TU Berlin, Germany); Gilles Tredan (LAAS, CNRS, Toulouse, France)</p> <p><b>JMake: Dependable Compilation for Kernel Janitors</b> Julia Lawall, Gilles Muller (Sorbonne Universites/Inria/UPMC/LIP6)</p>	<p><u>Session 6B: Measurement Studies</u></p> <p><u>Location:</u> <u>Chair:</u> Chuan Yue</p> <p><b>Counting in the Dark: Caches Discovery and Enumeration in the Internet</b> Amit Klein, Haya Shulman, Michael Waidner (Fraunhofer SIT)</p> <p><b>Entropy-Based Security Analytics: Measurements from a Critical Information System</b> Marcello Cinque, Raffaele Della Corte, Antonio Pecchia (Federico II University of Naples, Italy)</p> <p><b>Exploring the Long Tail of (Malicious) Software Downloads</b> Babak Rahbarinia (Auburn University Montgomery); Marco Balduzzi (Trend Micro Inc.); Roberto Perdisci (University of Georgia)</p>	<p><u>Session 6C: Student Forum</u></p> <p><u>Location:</u> <u>Chair:</u> Saurabh Bagchi</p> <p><b>Modeling Error Propagation in Programs</b> Guanpeng Li, University of British Columbia, Canada</p> <p><b>Automated Program Diversity using Program Synthesis</b> Abraham Chan, University of British Columbia, Canada</p> <p><b>Evaluation of the dependability of critical infrastructures using hybrid Petri nets with random variables and stochastic simulation</b> Carina Pilch, Institute of Mathematics and Computer Science, Munster, Germany</p> <p><b>Enabling Low Degraded Read Latency and Fast Recovery for Erasure Coded Cloud Storage Systems</b> Peng Li, Nankai University, China</p>
17:30 – 22:00	<p style="text-align: center;"><b>Conference Banquet</b></p> <p style="text-align: center;"><b>Visit to Denver Art Museum and Dinner</b></p>		

## Thursday, June 29, 2017

8:00 – 16:00	<b>Registration</b>		
8:30 – 10:00	<p style="text-align: center;"><u>Session 7A:</u> Android</p> <p><u>Location:</u>  <b>Chair:</b> Marco Vieira</p> <p><b>Ghost Installer in the Shadow: Security Analysis of App Installation on Android</b>  Yeonjoon Lee (Indiana University); Tongxin Li (Peking University); Nan Zhang (Indiana University); Soteris Demetriou (University of Illinois at Urbana-Champaign); Mingming Zha (Chinese Academy of Sciences); XiaoFeng Wang (Indiana University); Kai Chen (Chinese Academy of Sciences); Xiaoyong Zhou (Samsung Research); Xinhui Han (Peking University); Michael Grace</p> <p><b>DyDroid : Measuring Dynamic Code Loading and Its Security Implications in Android Applications</b>  Zhengyang Qu (Northwestern University); Shahid Alam (Qatar University); Yan Chen (Northwestern University); Xiaoyong Zhou (Google); Wangjun Hong (Northwestern University); Ryan Riley (Qatar University)</p> <p><b>JGRE: An Analysis of JNI Global Reference Exhaustion Vulnerabilities in Android</b>  Yacong Gu (Chinese Academy of Sciences); Kun Sun (George Mason University); Purui Su (Chinese Academy of Sciences); Qi Li (Tsinghua University); Yemian Lu, Lingyun Ying, Dengguo Feng (Chinese Academy of Sciences)</p>	<p style="text-align: center;"><u>Session 7B:</u> Privacy and Security</p> <p><u>Location:</u>  <b>Chair:</b> Sonia Ben Mokhtar</p> <p><b>I know nothing about you but here is what you might like</b>  Rachid Guerraoui (EPFL); Anne-Marie Kermarrec (Inria); Rhicheck Patra (EPFL); Mahammad Valiyev (TU Munich); Jingjing Wang (EPFL)</p> <p><b>What You See is Not What You Get! Thwarting Just-in-Time ROP with Chameleon</b>  Ping Chen, Jun Xu (Pennsylvania State University); Zhisheng Hu (Pennsylvania State University); Xinyu Xing (Pennsylvania State University); Minghui Zhu (Pennsylvania State University); Bing Mao (Nanjing University); Peng Liu (Pennsylvania State University)</p> <p><b>DynaMiner: Leveraging Offline Infection Analytics for On-the-Wire Malware Detection</b>  Birhanu Eshete, V.N. Venkatakrishnan (University of Illinois at Chicago)</p>	<p style="text-align: center;"><u>Session 7C:</u> Best of SELSE</p> <p><u>Location:</u>  <b>Chair:</b> Alan Wood</p> <p><b>Evaluation and Mitigation of Soft Errors in Neural Network-based Object Detection in Three GPU Architectures</b>  Fernando Fernandes dos Santos, Lucas Draghetti, Lucas Weigel, Luigi Carro, Philippe Navaux, and Paolo Rech (Instituto de Informatica, Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brasil)</p> <p><b>DRAM Scaling Error Evaluation Model Using Various Retention Time</b>  Seong-Lyong Gong (UT Austin), Jung-rae Kim (Microsoft), and Mattan Erez (UT Austin)</p> <p><b>Deep Healing: Ease the BTI and EM Wearout Crisis by Activating Recovery</b>  Xinfei Guo and Mircea R. Stan (Department of Electrical and Computer Engineering, University of Virginia)</p>



10:00 – 10:30	Coffee Break		
10:30 – 12:00	<p><u>Session 8A:</u> Analytic Models</p> <p><u>Location:</u> <u>Chair:</u> Eric Rozier</p> <p><b>Statistical Model Checking for hybrid Petri Nets with multiple general transitions</b> Carina Pilch, Anne Remke (Westfälische Wilhelms-Universität Münster)</p> <p><b>Deadline-Aware Multipath Communication: An Optimization Problem</b> Laurent Chuat, Adrian Perrig (ETH Zurich); Yih-Chun Hu (University of Illinois at Urbana-Champaign)</p> <p><b>Attacker-Induced Traffic Flow Instability in a Stream of Semi-Automated Vehicles</b> Daniel D. Dunn, Samuel A. Mitchell, Imran Sajjad (Utah State University); Ryan M. Gerdes (Virginia Tech); Rajnikant Sharma (University of Cincinnati); Ming Li (University of Arizona)</p>	<p><u>Session 8B:</u> Power System and Smart Grid</p> <p><u>Location:</u> <u>Chair:</u> Felicita Di Giandomenico</p> <p><b>Practical Experience Report Smart Maintenance via Dynamic Fault Tree Analysis: A Case Study on Singapore MRT System</b> Yan Liu, Yue Wu (Advanced Digital Science Center); Zbigniew Kalbarczyk (University of Illinois at Urbana-Champaign)</p> <p><b>RL-BLH: Learning-Based Battery Control for Cost Savings and Privacy Preservation for Smart Meters</b> Jinkyu Koo, Xiaojun Lin, Saurabh Bagchi (Purdue University)</p> <p><b>Compromising Security of Economic Dispatch in Power System Operations</b> Devendra Shelar (Massachusetts Institute of Technology); Pengfei Sun (Rutgers University); Saurabh Amin (Massachusetts Institute of Technology); Saman Zonouz (Rutgers University)</p>	<p><u>Session 8C:</u> Tool/Demo Security and Testing Tools</p> <p><u>Location:</u> <u>Chair:</u> Saurabh Bagchi</p> <p><b>Fex: A Software Systems Evaluator</b> Oleksii Oleksenko, Dmitrii Kuvaiskii, Pramod Bhatotia, Christof Fetzer (TU Dresden)</p> <p><b>Demonstrating a Tool for Injection Attack Prevention in MySQL</b> Ibéria Medeiros (LaSIGE, Faculdade de Ciências da Universidade de Lisboa); Miguel Beatriz (INESC-ID, Instituto Superior Técnico da Universidade de Lisboa); Nuno Neves (LaSIGE, Faculdade de Ciências da Universidade de Lisboa); Miguel Correia (INESC-ID, Instituto Superior Técnico da Universidade de Lisboa)</p> <p><b>BinWrite: Efficient Static Binary Rewriting for Security</b> William Hawkins, Jason D. Hiser, Michele Co, Anh Nguyen-Tuong, Jack W. Davidson (University of Virginia)</p>
12:00 – 13:30	Lunch		

13:30 – 15:00	<p align="center"><u>Session 9A: Attacks</u></p> <p><u>Location:</u> <u>Chair:</u> Karthik Pattabiraman</p> <p><b>ATTAIN: An Attack Injection Framework for Software-Defined Networking</b> Benjamin E. Ujcich, Uttam Thakore, William H. Sanders (University of Illinois at Urbana-Champaign)</p> <p><b>The Balance Attack Against Proof-Of-Work Blockchains: The R3 Consortium as an Example</b> Christopher Natoli, Vincent Gramoli (Data61-CSIRO and University of Sydney)</p> <p><b>Voiceprint: A Novel Sybil Attack Detection Method for VANETs</b> Yuan Yao (Northwestern Polytechnical University); Bin Xiao (The Hong Kong Polytechnic University); Gaofei Wu (Northwestern Polytechnical University); Xue Liu (McGill University); Zhiwen Yu, Kailong Zhang, Xingshe Zhou (Northwestern Polytechnical University)</p>	<p align="center"><u>Session 9B: Protocol and Behavioral Analysis</u></p> <p><u>Location:</u> <u>Chair:</u> Yair Amir</p> <p><b>Analysing Selfishness Flooding with SEINE</b> <b>Guido Lena Cota</b> (Università degli Studi di Milano); Sonia Ben Mokhtar (LIRIS-CNRS-INSa Lyon); Gabriele Gianini (Università degli Studi di Milano); Julia Lawall, Gilles Muller (Sorbonne Universités, Inria, CNRS, UPMC, LIP6); Ernesto Damiani (Università degli Studi di Milano, EBTIC/Khalifa University); Lionel Brunie (LIRIS-CNRS-INSa Lyon)</p> <p><b>Detecting Passive Cheats in Online Games via Performance-Skillfulness Inconsistency</b> Daiping Liu (University of Delaware); Xing Gao (College of William and Mary); Mingwei Zhang (Intel Labs); Haining Wang (University of Delaware); Angelos Stavrou (George Mason University)</p> <p><b>Analyzing Operational Behavior of Stateful Protocol Implementations for Detecting Semantic Bugs</b> Endadul Hoque (Purdue University); Omar Chowdhury (University of Iowa); Sze Yiu Chau (Purdue University); Cristina Nita-Rotaru (Northeastern University); Ninghui Li (Purdue University)</p>	
15:15 – 16:15	<p align="center">Technical Committee Meeting</p> <p><u>Location:</u></p>		