The 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN 2014)

Final Program

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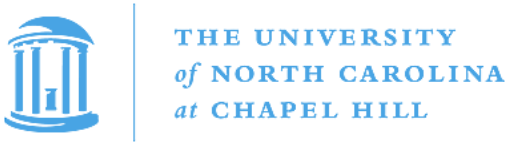

MONDAY, JUNE 23rd

8:00-12:30 (check individual workshop programs for exact start and end times)	**Workshop 1 (all day)** **ToSG** Trustworthiness of Smart Grids Location: Conference A	**Workshop 2 (all day)** **FTXS** Fault-Tolerance for HPC at Extreme Scale Location: Conference E	**Workshop 3 (morning only)** **DSSO** Dependability and Security of System Operation Location: Conference Two	**Workshop 4 (morning only)** **DCDV** Dependability of Clouds, Data Centers, and Virtual Machine Technology Location: Conference Four
13:30-17:30			**Tutorial 1** Biologically Inspired Networking Approaches as Building Blocks for Distributed Systems Location: Conference Two	**Tutorial 2** Impact of Soft Errors on Microprocessors Location: Conference Four
18:30-20:00	**Welcome Reception** Location: Salon IV			

TUESDAY, JUNE 24th

8:30-9:00	**Opening Remarks, Jean-Claude Laprie Award Presentation** Location: Salons I-VI
9:00-10:30	**Best Paper Award Session** Chair: Nuno Neves Location: Salons I-VI **Failure Analysis of Virtual and Physical Machines: Patterns, Causes and Characteristics** Robert Birke, Ioana Giurgiu, Lydia Y. Chen, Dorothea Wiessman, Ton Engbersen (IBM Zurich) **Reliability and Security Monitoring of Virtual Machines Using Hardware Architectural Invariants** Cuong Pham, Zachary Estrada, Phuong Cao, Zbigniew Kalbarczyk, Ravishankar Iyer (University of Illinois at Urbana-Champaign) **Lazy Checkpointing: Exploiting Temporal Locality in Failures to Mitigate Checkpointing Overheads on Extreme-Scale Systems** Devesh Tiwari, Saurabh Gupta, Sudharshan Vazhkudai (Oak Ridge National Laboratory)
10:30-11:00	*Break*

11:00-12:30	**Session 1A : Identifying Malicious Activity** Chair: Zbigniew Kalbarczyk Location: Salons I-III **Titan: Enabling Low Overhead and Multi-faceted Network Fingerprinting of a Bot** Osama Haq (National University of Computer & Emerging Sciences), Waqar Ahmed (University of Trento), Affan A. Syed (National University of Computer & Emerging Sciences) **pSigene: Webcrawling to Generalize SQL Injection Signatures** Gaspar Modelo-Howard (Narus), Chris Gutierrez, Fahad Arshad, Saurabh Bagchi, Yuan Qi (Purdue University) **Probabilistic Inference for Obfuscated Network Attack Sequences** Haitao Du, Shanchieh Jay Yang (Rochester Institute of Technology)	**Session 1B: Networking** Chair: Paulo Verissimo Location: Salons IV-VI **Anomaly Characterization in Large Scale Networks** Emmanuelle Anceaume (IRISA), Yann Busnel (Université de Nantes), Erwan Le Merrer (Technicolor), Romaric Ludinard (INRIA), Jean-Louis Marchand (ENS Rennes), Bruno Sericola (INRIA) **SAND: A Fault-Tolerant Streaming Architecture for Network Traffic Analytics** Qin Liu, John C.S. Lui (The Chinese University of Hong Kong), Cheng He, Lujia Pan, Wei Fan, Yunlong Shi (Huawei) **An Adaptable Rule Placement for Software-Defined Networks** Shuyuan Zhang (Princeton University), Franjo Ivancic, Cristian Lumezanu (NEC Labs), Yifei Yuan (University of Pennsylvania), Aarti Gupta (NEC Labs), Sharad Malik (Princeton University
12:30-13:45	*Lunch*	
13:45-15:15	**Session 2A : Software Vulnerabilities** Chair: Miguel Correia Location: Salons I-III **Detecting Malicious Javascript in PDF through Document Instrumentation** Daiping Liu, Haining Wang (College of William and Mary), Angelos Stavrou (George Mason University) **Scriptless Timing Attacks on Web Browser Privacy** Bin Liang, Liangkun Liu, Wenchang Shi, Wei You (Renmin University of China), Mario Heiderich (Ruhr-University Bochum) **Automatically Fixing C Buffer Overflows Using Program Transformations** Alex Shaw, Dusten Doggett, Munawar Hafiz (Auburn University)	**Session 2B: Cyber-Physical Systems** Chair: Mohamed Kaaniche Location: Salons IV-VI **Application-level Autonomic Hardware to Predict and Preempt Software Attacks on Industrial Control Systems** Lee W. Lerner, Zane R. Franklin, William T. Baumann, Cameron D. Patterson (Virginia Tech) **Monitor Based Oracles for Cyber-Physical System Testing (Practical Experience Report)** Aaron Kane, Philip Koopman (Carnegie Mellon University), Tom Fuhrman (General Motors) **Security Threat Analytics and Countermeasure Synthesis for Power System State Estimation** Mohammad Ashiqur Rahman, Ehab Al-Shaer (UNC Charlotte), Rajesh Kavasseri (North Dakota State University)
15:15-15:45	*Break*	

15:45-17:15	**Session 3A : Apps Attacks** Chair: Ilir Gashi Location: Salons I-III **You Can Call But You Can't Hide: Detecting Caller ID Spoofing Attacks** Hossen Mustafa, Wenyuan Xu (University of South Carolina), Ahmad-Reza Sadeghi, Steffen Schulz (Technische Universität Darmstadt) **On Tracking Information Flows through JNI in Android Applications** Chenxiong Qian, Xiapu Luo, Yuru Shao, Alvin Chan (The Hong Kong Polytechnic University) **Optical Delusions: A Study of Malicious QR Codes in the Wild** Amin Kharraz, Engin Kirda, William Robertson (Northeastern University), Davide Balzarotti, Aurélien Francillon (Institute Eurecom)	**Session 3B : Memory** Chair: Michael Lyu Location: Salons IV-VI **A Reliable 3D MLC PCM Architecture with Resistance Drift Predictor** Majid Jalili, Mohammad Arjomand, Hamid Sarbazi-Azad (Sharif University of Technology) **Mitigating Write Disturbance in Super Dense Phase Change Memories** Lei Jiang, Youtao Zhang, Jun Yang (University of Pittsburgh) **WL-Reviver: A Framework for Reviving any Wear-Leveling Techniques in the Face of Failures on Phase Change Memory** Jie Fan (Tsinghua University), Jiang Song (Wayne State University), Shu Jiwu, Sun Long, Hu Qingda (Tsinghua University)
17:45 – 22:00	**Banquet and Excursion to the High Museum of Art**	

WEDNESDAY, JUNE 25th

8:30-10:00	**Keynote Speech** **Sibyl: A System for Large Scale Machine Learning at Google** Tushar Chandra (Google) Chair: Doug Blough Location: Salons I-VI
10:00-10:30	*Break*

10:30-12:30	**Session 4A: Cloud Computing** Chair: Fernando Pedone Location: Salons I-III **Performance Sensitive Replication in Geo-Distributed Cloud Datastores** Shankaranarayanan Puzhavakath Narayanan, Ashiwan Sivakumar, Sanjay Rao, Mohit Tawarmalani (Purdue University) **POD-Diagnosis: Error Diagnosis of Sporadic Operations on Cloud Applications** Xiwei Xu, Liming Zhu, Ingo Weber, Len Bass, Daniel W. Sun (NICTA) **Catch Me if You Can: A Cloud-Enabled DDoS Defense** Quan Jia, Huangxin Wang, Dan Fleck, Fei Li, Angelos Stavrou, Walter A. Powell (George Mason University) **Secure Ranked Multi-Keyword Search for Multiple Data Owners in Cloud Computing** Zhang Wei, Xiao Sheng, Lin Yaping, Zhou Ting, Zhou Siwang (Hunan University)	**Session 4B: Social and Online Services** Chair: Angelos Stavrou Location: Salons IV-VI **S-MATCH: Verifiable Privacy-Preserving Profile Matching for Mobile Social Services** Xiaojing Liao, A. Selcuk Uluagac, Raheem A. Beyah (Georgia Institute of Technology) **Social Puzzles: Context-Based Access Control in Online Social Networks** Murtuza Jadliwala, Anindya Maiti, Vinod Namboodiri (Wichita State University) **Mining Historical Issue Repositories to Heal Large-Scale Online Service Systems** Rui Ding, Qiang Fu, Jian-Guang Lou, Qingwei Lin, Dongmei Zhang (Microsoft Research), Tao Xie (University of Illinois) **Understanding Interoperability Issues of Web Service Frameworks** Ivano Alessandro Elia, Nuno Laranjeiro, Marco Vieira (Universidade de Coimbra)	**Session 4C: Work in Progress, Fast Abstracts, and Student Forum** Location: Conference A *Work in Progress / Fast Abstracts* Chair: Marcello Cinque **VCube: A Provably Scalable Virtual Topology for Dynamic Systems** E.P. Duarte Jr., L. Bona, V. Ruoso **Application-Layer Hybrid ARQ in CAN Networks for Tolerating DC-DC Converter Noise** M. Negishi, A. Saysanasongkham, M. Ohara, M. Arai, S.i Fukumoto, M. Nakamura **SITAN: Services for Ad Hoc Networks with Unknown Participants** D. Matos, N. Neves, A. Bessani **Diversity for Safety and Security in Embedded Systems** I. Gashi, A. Povyakalo, L. Strigini, M. Matschnig, T. Hinterstoisser, B. Fischer **Increasing Confidence by Strengthening an Inference in a Single Argument Leg: An Alternative to Multi-Legged Arguments** A. Klein, J. Goodenough, J. McGregor, C. Weinstock **Towards Exploring the Soft Error Susceptibility of Heapsort Algorithms** Q. Guan, N. Debardeleben, S. Blanchard, S. Fu **Web Application Protection with the WAP Tool** I. Medeiros, N. Neves, M. Correia **Anchors of Trust for Secure Configuration and Trustworthiness Assessment in SDN** D. Kreutz, P. Verissimo, F. Ramos **Hypervisor Introspection: Exploiting Timing Side-Channels against VM Monitoring** G. Wang, Z. Estrada, C. Pham, Z. Kalbarczyk, R. Iyer **Designing a Performance Isolation Benchmark for Virtualized Systems** R. Ramamurthy, Z. Estrada, C. Pham, Z. Kalbarczyk, R. Iyer *Student Forum* Chair: Cristina Nita-Rotaru **Inherent Diversity for Fault Detection in Complex Hardware/Software Systems** Peter Okech
12:30-14:00	*Lunch*		

14:00-15:30	**Session 5A: State Machine Replication** Chair: David Taylor Location: Salons I-III **Scalable State-Machine Replication** Carlos Eduardo Bezerra, Fernando Pedone (University of Lugano), Robbert van Renesse (Cornell University) **Clock-RSM: Low-Latency Inter-Datacenter State Machine Replication Using Loosely Synchronized Physical Clocks** Jiaqing Du (EPFL), Daniele Sciascia (University of Lugano), Sameh Elnikety (Microsoft Research), Willy Zwaenepoel (EPFL), Fernando Pedone (Univ. of Lugano) **State Machine Replication for the Masses with BFT-SMaRt** Alysson Bessani, João Sousa (University of Lisbon), Eduardo Alchieri (University of Brasilia)	**Session 5B : Faults** Chair: Takashi Nanya Location: Salons IV-VI **Hardware-Software Integrated Diagnosis for Intermittent Hardware Faults** Majid Dadashi, Layali Rashid, Karthik Pattabiraman, Sathish Gopalakrishnan (University of British Columbia) **Quantifying the Accuracy of High-Level Fault Injection Techniques for Hardware Faults** Jiesheng Wei, Anna Thomas, Guanpeng Li, Karthik Pattabiraman (University of British Columbia) **Hard Drive Failure Prediction Using Classification and Regression Trees** Jing Li, Xinpu Ji, Yuhan Jia, Bingpeng Zhu, Zhongwei Li, Gang Wang, Xiaoguang Liu (Nankai University)
15:30-16:00	*Break*	
16:00-17:30	**Session 6A: Databases and Storage** Chair: Cristina Nita-Rotaru Location: Salons I-III **Developing Correctly Replicated Databases Using Formal Tools** Nicolas Schiper, Vincent Rahli, Robbert Van Renesse, Mark Bickford, Robert L. Constable (Cornell University) **The Energy Efficiency of Database Replication Protocols** Nicolas Schiper (Cornell University), Fernando Pedone (University of Lugano), Robbert Van Renesse (Cornell University) **Degraded-First Scheduling for MapReduce in Erasure-Coded Storage Clusters** Runhui Li, Patrick P. C. Lee, Yuchong Hu (The Chinese University of Hong Kong)	**Session 6B: GPUs** Chair: Alysson Bessani Location: Salons IV-VI **Warped-Shield: Tolerating Hard Faults in GPGPUs** Waleed Dweik, Mohammed AbdelMajeed, Murali Annavaram (University of Southern California) **A-ABFT: Autonomous Algorithm-Based Fault Tolerance for Matrix Multiplications on Graphics Processing Units** Claus Braun, Sebastian Halder, Hans-Joachim Wunderlich (University of Stuttgart) **Impact of GPUs Parallelism Management on Safety-Critical and HPC Applications Reliability** Paolo Rech, Laercio Lima Pilla, Philippe Olivier Navaux, Luigi Carro (Universidade Federal do Rio Grande do Sul)

THURSDAY, JUNE 26th

9:00-10:30	**Session 7A: System Configuration and Provisioning** Chair: Elias Duarte Location: Salons I-III **Characterizing Application Memory Error Vulnerability to Optimize Datacenter Cost via Heterogeneous-Reliability Memory** Yixin Luo (Carnegie Mellon Univ.), Sriram Govindan, Bikash Sharma, Mark Santaniello (Microsoft), Justin Meza (Carnegie Mellon Univ.), Aman Kansal, Jie Liu, Badriddine Khessib, Kushagra Vaid (Microsoft), Onur Mutlu (Carnegie Mellon Univ.) **Ocasta: Clustering Configuration Settings For Error Recovery** Zhen Huang, David Lie (University of Toronto) **FACE-CHANGE: Application-Driven Dynamic Kernel View Switching in a Virtual Machine** Zhongshu Gu, Brendan Saltaformaggio, Xiangyu Zhang, Dongyan Xu (Purdue University)	**Session 7B : Formal Methods** Chair: Matti Hiltunen Location: Salons IV-VI **Model Checking Stochastic Automata for Dependability and Performance Measures** Peter Buchholz, Jan Kriege, Dimitri Scheftelowitsch (TU Dortmund) **Scalable Security Models for Assessing Effectiveness of Moving Target Defenses** Jin B. Hong, Dong Seong Kim (Univ. of Canterbury) **A Novel Variable Ordering Heuristic for BDD-Based k-Terminal Reliability** Minh Lê, Josef Weidendorfer (TU Munich), Max Walter (Siemens AG)
10:30-11:00	*Break*	
11:00-12:30	**Session 8A: System and Component Reliability** Chair: Rick Schlichting Location: Salons I-III **Adaptive Low-Power Architecture for High-Performance and Reliable Embedded Computing** Ronaldo Ferreira, Jean da Rolt, Gabriel Nazar, Alvaro Moreira, Luigi Carro (Universidade Federal do Rio Grande do Sul) **HV Code: An All-Around MDS Code to Improve Efficiency and Reliability of RAID-6 Systems** Zhirong Shen, Jiwu Shu (Tsinghua University) **Replication-Based Fault Tolerance for Large-Scale Graph Processing** Peng Wang, Kaiyuan Zhang, Rong Chen, Haibo Chen, Haibing Guan (Shanghai Jiao Tong University)	**Session 8B: Miscellaneous** Chair: Cynthia Sturton Location: Salons IV-VI **System Call Redirection: A Practical Approach to Meeting Real-world Virtual Machine Introspection Needs** Rui Wu (Nanjing Univ.), Peng Liu (Penn State Univ.), Chen Ping, Bing Mao, Li Xie (Nanjing Univ.) **Interoperability between Fingerprint Biometric Systems: An Empirical Study** Stephen Mason, Ilir Gashi (City Univ. London), Emanuela Marasco, Luca Lugini, Bojan Cukic (West Virginia Univ.) **DNS Noise: Measuring the Pervasiveness of Disposable Domains in Modern DNS Traffic** Yizheng Chen (Georgia Institute of Technology), Manos Antonakakis (Damballa), Roberto Perdisci (University of Georgia), Yacin Nadji, David Dagon, Wenke Lee (Georgia Institute of Technology)

12:30-14:00	*Lunch*
14:00-15:30	**Session 9 : Failure Analysis and Assurance** Chair: David Powell Location: Salons I-III **Lessons Learned From the Analysis of System Failures at Petascale: The Case of Blue Waters** Catello Di Martino (University of Illinois at Urbana Champaign), Fabio Baccanico (University of Naples Federico II), Joseph Fullop, William Kramer (National Center for Supercomputing Applications), Zbigniew Kalbaczyk, Ravishankar Iyer (University of Illinois at Urbana Champaign) **GemFI: A Fault Injection Tool for Studying the Behavior of Applications on Unreliable Substrates** Konstantinos Parasyris (University of Thessaly), Georgios Tziantzioulis (Northwestern University), Christos D. Antonopoulos, Nikolaos Bellas (University of Thessaly) **A Design and Implementation of an Assurance Case Language** Yutaka Matsuno (University of Electro-Communications)
15:30-15:40	*Break*
15:40-16:30	**Technical Committee Meeting (Open To All)** Location: Salons IV-VI