2015 11th International Conference on the Design of Reliable Communication Networks

(DRCN 2015)

Kansas City, Missouri, USA
24 – 27 March 2015

Program

B-Tu: Continental Breakfast

Tu1: Tutorial-1: Survivable Optical Networks

Tu2: Tutorial-2: Modeling and Quantification of Network Survivability

L-Tu: Lunch

Tu3: Tutorial-3: Advanced Coding Schemes for Improving Network Reliability

Tu4: Tutorial-4: Recursive InterNetwork Architecture

R: Reception

B-W: Continental Breakfast

O: Opening Remark

K1: Keynote-1: Network Adaptability to Combat Disaster Disruptions and Cascading Failures

TS1: Robustness-I

Virtual Network Embedding under Uncertainty: Exact and Heuristic Approaches
Stefano Coniglio, Arie M. C. A. Koster and Martin Tieves (RWTH Aachen University, Germany)
pp. 1-8

Cost-Efficient Multi-Layer Network Design Employing Traffic Re-Aggregation and Shared Protection Across Layers
Tomohiro Hashiguchi, Yutaka Takita, Kazuyuki Tajima and Toru Katagiri (Fujitsu Laboratories LTD., Japan)
pp. 9-16

Enhancing Network Robustness via Shielding
Jianan Zhang (Massachusetts Institute of Technology, USA); Eytan Modiano (MIT, USA); David Hay (The Hebrew University of Jerusalem, Israel)
pp. 17-24

Detour Planning for Fast and Reliable Failure Recovery in SDN with OpenState

Antonio Capone (Politecnico di Milano, Italy); Carmelo Cascone (Politecnico di Milano and École Polytechnique de Montréal, Italy); Alessandro Nguyen (Politecnico di Milano, Italy); Brunilde Sansò (Ecole Polytechnique de Montreal, Canada)

pp. 25-32

On Smart Grid Communications Reliability

Velin Kounev, Martin Lévesque and David Tipper (University of Pittsburgh, USA); Teresa Gomes (University of Coimbra & INESC COIMBRA, Portugal)

pp. 33-40

L-W: Lunch

TS2: Protection and Recovery-I

DSP Survivable Network Capacity Allocation and Topology Design Using Multi-Period Network Augmentation

Brody Todd and John Doucette (University of Alberta, Canada)

pp. 41-48

Finding Geographic Vulnerabilities in Multilayer Networks using Reduced Network State Enumeration

M. Todd Gardner (University of Missouri, Kansas City & Federal Aviation Administration, USA); Rebecca May, Cory Beard and Deep Medhi (University of Missouri-Kansas City, USA)

pp. 49-56

Protection Coordination for Dual Failure on Two-Layer Networks

Victor Yu Liu (Huawei, USA)

pp. 57-64

Data Recovery After Geographic Correlated Attacks

Guy Grebla (Columbia University, USA); Alon Efrat (University of Arizona, USA); Esther Ezra (Courant Institute of Mathematical Science, USA); Rom Pinchasi (Technion, USA); Swaminathan Sankararaman (Akamai Technologies, USA)

pp. 65-72

Demand-Wise Shared Protection Network Design and Topology Allocation with Dual-Failure Restorability

Brody Todd and John Doucette (University of Alberta, Canada)

pp. 73-80

Poster: Poster Session

An Efficient Content Search Scheme to Expand the Search Range in Content-Centric Networking
Yurino Sato and Takahiro Kawano (University of Kitakyushu, Japan); Hiroyuki Koga (The University of Kitakyushu, Japan)
pp. 81-82

A Selective Caching Scheme that Adapts to Content Popularity Changes in Content-Centric Networking
Takahiro Kawano (University of Kitakyushu, Japan); Masayoshi Shimamura (Network Application Engineering Laboratories, Ltd., Japan); Hiroyuki Koga (The University of Kitakyushu, Japan)
pp. 83-84

Reliability in Automotive Ethernet Networks
Fabio L. Soares and Divanilson R. Campelo (Universidade Federal de Pernambuco, Brazil); Sarah Ruepp, Ying Yan and Lars Dittmann (Technical University of Denmark, Denmark); Lars Ellegaard (Vitesse Semiconductor, Denmark)
pp. 85-86

Errors Announcing 32-bit ASNs in BGP Routes
Riad Mazloum (UPMC Sorbonne Universités, France); Jordan Augé and Dario Rossi (Telecom ParisTech, France); Timur Friedman (UPMC Sorbonne Universités, France)
pp. 87-88

Look-Ahead Rate Adaptation Algorithm for DASH under Varying Network Environments
Parikshit Juluri (University of Missouri-Kansas City, USA); Venkatesh Tamarapalli (Indian Institute of Technology Guwahati, India); Deep Medhi (University of Missouri-Kansas City, USA)
pp. 89-90

Implementation and Evaluation of the DFF Protocol for Advanced Metering Infrastructure (AMI) Networks
Akshay Kapoor (San Jose State Univ, USA); Melody Moh (San Jose State University, USA)
pp. 91-92

Quantitative Study of Reliable Communication Infrastructure in Smart Grid NAN
Shengjie Xu (University of Nebraska-Lincoln, USA); Yi Qian (University of Nebraska–Lincoln, USA)
pp. 93-94

TS3: Robustness-II

Modelling Robustness of Critical Infrastructure Networks
Srinath Pinnaka, Rajgopal Yarlagadda and Egemen K. Çetinkaya (Missouri University of Science and Technology, USA)
pp. 95-98

Performance Evaluation of Resilience using Service Relocation for GMPLS Networks
Henrik Wessing, Sven Hermann and Sarah Ruepp (Technical University of Denmark, Denmark)
pp. 99-102

Effects of Multi-Link Failures on Low Priority Traffic in MPLS-TE Networks
Zhen Lu, Yamini Jayabal and Yue Fei (University of Texas at Dallas, USA); Andrea Fumagalli (UTD, USA); Gabriele Maria Galimberti and Giovanni Martinelli (Cisco Photonics, Italy)
pp. 103-106

Understanding University Campus Network Reliability Characteristics using a Big Data Analytics Tool
Hyungbae Park, Haymanot Gebre-Amlak, Baek-Young Choi and Sejun Song (University of Missouri - Kansas City, USA); David Wolfinbarger (University of Missouri-Kansas City, USA)
pp. 107-110

Design of A Software-Defined Resilient Virtualized Networking Environment
Xuan Liu (University of Missouri-Kansas City, USA); Sarah Edwards (BBN Technologies, USA); Niky Riga (BBN Technologies & BBN Technologies, USA); Deep Medhi (University of Missouri-Kansas City, USA)
pp. 111-114

The Human Factor: a Challenge for Network Reliability Design
Magreth Mushi, Emerson Murphy-Hill and Rudra Dutta (North Carolina State University, USA)
pp. 115-118

Dual Failure Resiliency on Single Failure Protected Packet Optical Integrated Networks
Zhicheng Sui (Huawei Technologies Co., Ltd., P.R. China); Victor Yu Liu (Huawei, USA)
pp. 119-122

B-Th: Continental Breakfast

K2: Keynote-2: Concepts and Implementation of "Disaster-free Network"

Concept and Implementation of "Disaster-free Network"
Hiroshi Saito (NTT & NTT Network Technology Laboratories, Japan)
pp. 123-124

TS4: Resilience and Anomaly Detection

Robustness Analysis of Mobile Ad Hoc Networks Using Human Mobility Traces
Dongsheng Zhang (The University of Kansas, USA); James P. G. Sterbenz
(University of Kansas & Lancaster University (UK), USA)
pp. 125-132

Survivability as a Generalization of Recovery
Poul E. Heegaard (Norwegian University of Science and Technology & NTNU,
Norway); Bjarne E. Helvik (Norwegian University of Science and Technology,
Norway); Kishor S. Trivedi (Duke University, USA); Fumio Machida (NEC
Corporation, Japan)
pp. 133-140

Performability Analysis of a Metropolitan Area Cellular Network
Kostas N Oikonomou (AT&T Labs Research, USA); Rakesh K Sinha and Byoung-
Jo J. Kim (AT&T Labs - Research, USA); Robert Doverspike (RD Doverspike
Consulting, USA)
pp. 141-148

PCA-based Network-wide Correlated Anomaly Event Detection and Diagnosis
Prasad Calyam, Yuanxun Zhang and Saptarshi Debroy (University of Missouri-
Columbia, USA); Mukundan Sridharan (The Samraksh Company, USA)
pp. 149-156

**Comprehensive Comparison and Accuracy of Graph Metrics in Predicting Network
Resilience**
Mohammed J.F. Alenazi (The University of Kansas & King Saud University, USA);
James P. G. Sterbenz (University of Kansas & Lancaster University (UK), USA)
pp. 157-164

L-Th: Lunch

TS5: Availability and Recovery

Toward Control Path High Availability for Software-Defined Networks
Hyungbae Park (University of Missouri-Kansas City, USA); Sejun Song (University of Missouri Kansas City, USA); Baek-Young Choi (University of Missouri - Kansas City, USA); Taesang Choi (Electronic and Telecommunications Research Institute, Korea)
pp. 165-172

Modelling Interdependencies over Incomplete Join Structures of Power Law Networks
Goitom Weldehawaryat (Gjovik University College, Norway); Stephen D. Wolthusen (Royal Holloway, University of London, United Kingdom)
pp. 173-178

Multi-vendor Interconnection-based Emergency Multi-layer Networks in Disaster Recovery
Sugang Xu (National Institute of Information and Communications Technology, Japan); Noboru Yoshikane (KDDI R&D Laboratories, Inc., Japan); Masaki Shiraiwa (National Institute of Information and Communications Technology, Japan); Takehiro Tsuritani (KDDI R&D Laboratories, Inc., Japan); Hiroaki Harai (National Institute of Information and Communications Technology, Japan); Yoshinari Awaji (National Institute of Information and Communications Technology (NICT), Japan); Naoya Wada (NICT, Japan)
pp. 179-184

An Analytical Model for Fast and Verifiable Assessment of Large Scale Wireless Mesh Networks
Florian Meier and Volker Turau (Hamburg University of Technology, Germany)
pp. 185-190

Size-based Flow Management Prototype for Dynamic DMZ
Haotian Wu, Xin Li, Caterina M Scoglio, Don M. Gruenbacher and Daniel Andresen (Kansas State University, USA)
pp. 191-196

Probability of Data Loss Between Mars Tumbleweed Rovers
Tyler Hook (Raytheon & Texas Tech University, USA); Alan Barhorst (Texas Tech University, USA)
pp. 197-202

P: Panel: Network Resilience for Massive Failures and Attacks

Moderator: James Sterbenz (The University of Kansas and Lancaster University)
Panelists: Rudra Dutta (North Carolina State University), Poul Heegaard (Norwegian University of Science and Technology), Biswanath Mukherjee (University of California-Davis), David Tipper (University of Pittsburgh).

T: Tour & Dinner

B-F: Continental Breakfast

K3: Keynote-3: Automated Planning and Provisioning for Carrier Metro Networks

TS6: Resilience and Detection

Data-Driven Analytics for Automated Cell Outage Detection in Self-Organizing Networks
    Ahmed Zoha (QMIC, Qatar); Arsalan Saeed (University of Surrey, United Kingdom); Ali Imran (University of Oklahoma, USA); Muhammad Ali Imran (University of Surrey, United Kingdom); Adnan Abu-Dayya (QMIC, Qatar)
    pp. 203-210

ResilientFlow: Deployments of Distributed Control Channel Maintenance Modules to Recover SDN from Unexpected Failures
    Takuma Watanabe and Takuya Omizo (Tokyo Institute of Technology, Japan); Toyokazu Akiyama (Kyoto Sangyo University, Japan); Katsuyoshi Iida (Tokyo Institute of Technology, Japan)
    pp. 211-218

Low-cost Enhancement of the Intra-domain Internet Robustness Against Intelligent Node Attacks
    Panagiotis Pantazopoulos (Institute of Communication and Computer Systems (ICCS), Greece); Ioannis Stavrakakis (National and Kapodistrian University of Athens, Greece)
    pp. 219-226

Evolution of the IP-over-Optical Core Network
    Weiyi Zhang (AT&T Labs Research, USA); Balagangadhar G Bathula and Rakesh K Sinha (AT&T Labs - Research, USA); Robert Doverspike (RD Doverspike Consulting, USA); Peter Magill (Silicon Lightwave Services, USA); Aswatnarayan Raghuram (AT&T Labs, USA); Gagan Choudhury (AT&T Labs - Research, USA)
    pp. 227-234

Optimising Dual Homing for Long-reach Passive Optical Networks
Alejandro Arbelaez (Insight Centre for Data Analytics, Ireland); Deepak Mehta (Insight Centre for Data Analytics & University College Cork, Ireland); Barry O'Sullivan (University College Cork, Ireland); Luis Quesada (Insight Centre for Data Analytics, Ireland)
pp. 235-242

L-F: Lunch

TS7: Potpourri

Network Coding for Coping with Flash Crowd in P2P Multi-Channel Live Video Streaming
Navid Bayat and Hanan Lutfiyya (University of Western Ontario, Canada)
pp. 243-246

D2D Communication Underlay Uplink Cellular Network With Fractional Frequency Reuse
Zekun Zhang and Rose Qingyang Hu (Utah State University, USA); Yi Qian (University of Nebraska–Lincoln, USA); Apostolos Papathanassiou (Intel Corporation & Intel Architecture Group, USA); Geng Wu (Intel Corporation, USA)
pp. 247-250

Design for Reliable and Self-Sustaining Neighborhood Area Network in Smart Grid
Feng Ye (University of Nebraska-Lincoln, USA); Yi Qian (University of Nebraska–Lincoln, USA); Rose Qingyang Hu (Utah State University, USA)
pp. 251-254

Distributed DCT Based Data Compression in Clustered Wireless Sensor Networks
Minh T Nguyen and Keith A Teague (Oklahoma State University, USA)
pp. 255-258

An FPTAS for managing playout stalls for multiple video streams in cellular networks
Swapnoneel Roy (University of North Florida, USA); Anand Seetharam (California State University Monterey Bay, USA)
pp. 259-262

Multi-Failure Restoration with Minimal Flow Operations in Software Defined Networks
Saeed Akhavan Astaneh and Shahram Shah Heydari (University of Ontario Institute of Technology, Canada)
pp. 263-266

Real-Time Network Anomaly Detection System Using Machine Learning

Shuai Zhao, Mayanka Chandrashekar, Yugyung Lee and Deep Medhi (University of Missouri-Kansas City, USA)