2015 IEEE 14th Canadian Workshop on Information Theory (CWIT 2015)

St. John’s, NL, Canada
6-9 July 2015
Program

Welcoming Reception

Plenary Speaker: Monique Morrow, CTO CISCO Services
The Making of a 21st Century Technology Leader

Coffee Break

Invited Speakers Session I (1): Milica Stojanovic, Northeastern University, USA
Underwater Wireless Communication: An Overview of Challenges and Recent Results

Invited Speakers Session I (2): Sarah Katie Wilson, Santa Clara University, USA
Shine a Light: Optical Wireless Communications

Invited Speakers Session I (3): Alex Alvarado, University College, London, UK
Coding and Modulation for Optical Communication Systems

Lunch Break

Coding Theory

Higher dimensional varieties in coding
Hamid Usefi (Memorial University, Canada); Ian Blake (University of British Columbia, Canada); Kumar Murty (GANITA lab, Canada)
pp. 1-4

Non-Binary Distributed Arithmetic Coding
Ziyang Wang, Yongyi Mao and Iluju Kiringa (University of Ottawa, Canada)
pp. 5-8

Construction and Decoding of Generalized Skew-Evaluation Codes
Siyu Liu (University of Toronto, Canada); Felice Manganiello (Clemson University, USA); Frank R. Kschischang (University of Toronto, Canada)
pp. 9-13

A Fast Displacement-Based Peterson Decoder
Christian Senger and Frank R. Kschischang (University of Toronto, Canada)
pp. 14-17
Locality-aware fountain codes for massive distributed storage systems
Toritseju Okpotse (Queens University, Canada); Shahram Yousefi (Queen's University, Canada)
pp. 18-21

Afternoon Coffee Break

Information Theory

Upper Bound on the Capacity of the Nonlinear Schrödinger Channel
Mansoor Isvand Yousefi (Technical University of Munich, Canada); Gerhard Kramer (Technische Universität München, Germany); Frank R. Kschischang (University of Toronto, Canada)
pp. 22-26

On Maximal Correlation, Mutual Information and Data Privacy
Shahab Asoodeh, Fady Alajaji and Tamas Linder (Queen's University, Canada)
pp. 27-31

Characterization of Optimal Input Distributions for Gaussian-Mixture Noise Channels
Hung Vu (McGill University, Canada); Nghi H Tran (University of Akron, USA); M. Cenk Gursoy (Syracuse University, USA); Tho Le-Ngoc (McGill University, Canada); Subramaniya Hariharan (University of Akron, USA)
pp. 32-35

On the Secrecy Capacity of Fading Gaussian Wiretap Channel
Sanjay Karmakar and Anirban Ghosh (North Dakota State University, USA)
pp. 36-40

Enhancing Secrecy of the Gaussian Wiretap Channel
Mohamed Haj Taieb and Jean-Yves Chouinard (Laval University, Canada)
pp. 41-45

Plenary Speaker: Moe Win, Massachusetts Institute of Technology

Fundamental Limits of Network Localization and Navigation

Coffee Break

Invited Papers Session

On Bounds for the Cognitive Multiple Access Z-Interference Channel
Fernando Reátegui (University of Surrey, United Kingdom); Muhammad Zeeshan Shakir (Texas A&M University at Qatar (TAMUQ), Qatar); Muhammad Ali Imran and Rahim Tafazolli (University of Surrey, United Kingdom); Khalid A. Qaraqe (Texas A&M University at Qatar, USA); Telex M. N. Ngatched (Memorial University of Newfoundland, Canada)
pp. 46-49
Signal Detection for Ambient Backscatter System with Multiple Receiving Antennas
   Zhen Ma, Tengchan Zeng and Gongpu Wang (Beijing Jiaotong University, P.R. China); Feifei Gao
   (Tsinghua University, P.R. China)
   pp. 50-53

Effect of Interference of Full-Duplex Transmissions in Underlay Device-to-Device Communication
   Samad Ali and Nandana Rajatheva (University of Oulu, Finland); Matti Latva-aho (UOulu,
   Finland)
   pp. 54-57

Technologies for Future Broadband Wireless Evolution
   Doru Calin (Bell Labs, Alcatel-Lucent, USA)
   pp. 58-61

Lunch Break

Invited Speakers Session II (1): Shu Lin, University of California, Davis

A Broader View of the Superposition Construction of LDPC Codes

Invited Speakers Session II (2): Sofiene Affes, INRS, Canada

Efficient Distributed Collaborative Beamforming Designs for Real-World Applications

Invited Speakers Session II (3): Andrew Eckford, York University, Canada

Information Theory in Intercellular Signal Transduction

Coffee Break

Industry-Academia Invited Panel: The Roadmap for Open innovation

Moderator: Ray Gosine, Memorial University, Canada. Academia: Vijay Bhargava, UBC, Canada;
   Milica Stojanovic, Northeastern University, USA; Katie Wilson, Santa Clara University, USA. Industry:
   Dragos Cristea, Ciena, Canada; Doru Calin, Bell Labs, Alcatel-Lucent, USA; Monique Morrow, Cisco
   Services; Mark Newell, Altera NL, Canada.

Workshop Banquet

Plenary Speaker: Vahid Tarokh, Harvard University

Some Applications of The Theorem of Fisher-Tippett-Gnedenko
Coffee Break

Applications of Coding and Information Theory (Poster 1)

Using Bit Recycling to Reduce the Redundancy in Plurally Parsable Dictionaries
Ahmad Al-rababa’a and Danny Dubé (Université Laval, Canada)
pp. 62-65

Permutation Entropy for Signal Analysis: A Case Study of Synthetic Aperture Radar Imagery
Khalid El-Darymli (Northern Radar Inc., Canada); Eric Gill (Memorial University, Canada); Cecilia R Moloney (Memorial University of Newfoundland, Canada); Peter McGuire (C-Core, Canada); Desmond Power (C-CORE, Canada)
pp. 66-70

Database Query Privacy using Homomorphic Encryptions
Sudharaka Palamakumbura and Hamid Usefi (Memorial University, Canada)
pp. 71-74

Smart Home Automation System for Intrusion Detection
Danish A. Chowdhry, Raman Paranjape and Paul Laforge (University of Regina, Canada)
pp. 75-78

Overlapped Fountain Coding for Delay-Constrained Priority-Based Broadcast Applications
Khaled F. Hayajneh and Shahram Yousefi (Queen's University, Canada)
pp. 79-82

Uplink Scheduling in Multi-Cell MU-MIMO Systems with ZF Post-processing and Diversity Combining
Aasem N Alyahya and Jacek Ilow (Dalhousie University, Canada)
pp. 83-87

Approximate secrecy capacity region of an asymmetric MAC wiretap channel within 1/2 bits
Sanjay Karmakar and Anirban Ghosh (North Dakota State University, USA)
pp. 88-92

Digital Signal Processing and Its Applications

Wideband Localization via Range Likelihood based on Reduced Dataset
Stefania Bartoletti (ENDIF University of Ferrara, Italy); Wenhan Dai (Massachusetts Institute of Technology, USA); Andrea Conti (ENDIF University of Ferrara, WiLAB University of Bologna, Italy); Moe Win (Massachusetts Institute of Technology, USA)
pp. 93-96

A Novel Non-Parametric Method for Blind Identification of STBC Codes
Mostafa Mohammadkarimi and Octavia A. Dobre (Memorial University of Newfoundland, Canada)
pp. 97-100
Spatial Stream Scheduling in Uplink Multiuser MIMO Systems with Zero-Forcing Post-processing
Aasem N Alyahya and Jacek Ilow (Dalhousie University, Canada)
pp. 101-105

Cognitive Radios for Aeronautical Telemetry
Michael Rice and Jacob Frogget (Brigham Young University, USA)
pp. 106-109

Adaptive Block-Length Partitioned Viterbi Algorithm
Mohamed Haroun (Laval University, Canada); Sebastien Roy (University of Sherbrooke, Canada)
pp. 110-114

Lunch Break

Applications of Coding and Information Theory (Poster 2)

One Example of a non-Abelian Group Code over AWGN Channels
Jorge P Arpasi (University of Pampa - UNIPAMPA, Brazil)
pp. 115-118

Ocean Current Measurement Using Acoustic Sensor Network 'Challenges, Simulation, Deployement'
Samareh Attarsharghi (Memorial University of Newfoundland, Canada); Vlastimil Masek (Memorial University, Canada)
pp. 119-122

Capacity of the Millimeter Wave Underground Mine Channel
Mohamad El Khaled (Laval, Canada); Paul Fortier (Laval University, Canada); Mohamed Lassaad Ammari (Université Laval, Canada); Mohamed Haj Taieb (Laval University, Canada)
pp. 123-126

RF-Pilot Phase Noise Compensation for Long-Haul Coherent Optical OFDM Systems
Jingwen Zhu, Oluymeni Omomukuyo, Ramachandran Venkatesan, Cheng Li and Octavia A. Dobre (Memorial University of Newfoundland, Canada)
pp. 127-130

Single-Source Two-Terminal Multicast Networks with Overlapping Demands Over the Binary Erasure Channel
Arghavan Modiri and Shahram Yousefi (Queen's University, Canada)
pp. 131-134

A New Reliability-Based Incremental Redundancy Hybrid ARQ Scheme Using LDPC Codes
Hamid Saber and Ian D. Marsland (Carleton University, Canada)
pp. 135-138
Communication Systems

**On the Mutual Information of the VLC Channel in the presence of External Ambient Lighting**
Stefano Pergoloni (Sapienza University of Rome, Italy); Mauro Biagi, Stefania Colonnese, Gaetano Scarano and Roberto Cusani (Università La Sapienza di Roma, Italy)
pp. 139-142

**Outage Capacity and Throughput Analysis of Multiuser FSO Systems**
Sasan Zhalehpour and Murat Uysal (Ozyegin University, Turkey); Octavia A. Dobre and Telex M. N. Ngatched (Memorial University of Newfoundland, Canada)
pp. 143-146

**Optimal CDMA Signatures For Correlated Sources With a Multi-Antenna Receiver**
Chathura Illangakoon and Pradeepa Yahampath (University of Manitoba, Canada)
pp. 147-150

**Power Allocation for Distributed Estimation in Sensor Networks with Semi-Orthogonal MAC**
Jian Su and Ha Nguyen (University of Saskatchewan, Canada); Hoang D. Tuan (University of Technology, Sydney, Australia)
pp. 151-155

**Communication of Dependent Messages over Degraded Compound Channels**
Zhong Cheng and Yongyi Mao (University of Ottawa, Canada); Terence H. Chan (University of South Australia, Australia)
pp. 156-159

**Coffee Break**

**Applications of Coding and Information Theory (Poster 3)**

**Empirical Support for the High-Density Subset Sum Decision Threshold**
Thomas O'Neil and Travis Desell (University of North Dakota, USA)
pp. 160-164

**On a Generalised Typicality with Respect to General Probability Distributions**
Wuling Liu and Xiaoli Chu (University of Sheffield, United Kingdom); Jie Zhang (University of Sheffield, Dept. of Electronic and Electrical Engineering, United Kingdom)
pp. 165-169

**A Novel Image Quality Assessment Metric using Singular Value Decomposition**
Syed Salman Ali (University of Regina, Canada)
pp. 170-173

**Adaptive erasure code based distributed storage systems**
Brijesh Kumar Rai (IIT Guwahati, India)
pp. 174-177
Neural Network Associative Memories with Local Coding
Asieh Abolpour Mofrad (University of Bergen, Norway); Zahra Ferdosi (Amirkabir, Iran); Matthew Parker (University of Bergen, Norway); Mohammad Hesam Tadayon (Iran Telecommunication Research Center, Iran)
pp. 178-181

Relay-Assisted Communication

A DoF Analysis of Compress-and-Forward in MIMO Gaussian Relay Channel with Correlated Noises
Seyedarvin Ayoughi and Wei Yu (University of Toronto, Canada)
pp. 182-185

Buffer-Aided Relaying with Discrete Transmission Rates
Wayan Wicke (Friedrich-Alexander University, Germany); Nikola Zlatanov (University of British Columbia, Canada); Vahid Jamali (Friedrich-Alexander-University Erlangen-Nürnberg, Germany); Robert Schober (University of British Columbia, Canada)
pp. 186-189

Gaussian Multiple-Access Relay Channels with Non-Causal Side Information at the Transmitters
Assad Sahebalam and Soosan Beheshti (Ryerson University, Canada)
pp. 190-194

Improving Transmission Rate for the Two-Way Relay Channel by User Cooperation
Ahmad Abu Al Haija (McGill University, Canada); Mai Vu (Tufts University, USA)
pp. 195-199

Improved Training and Training Power Allocation Schemes for Multi-Relay AF Networks
Dan Wang (Henan University of Science and Technology, P.R. China); Yindi Jing (University of Alberta, Canada)
pp. 200-203