2017 IEEE Canada International Humanitarian Technology Conference (IHTC 2017)

Toronto, Ontario, Canada
21-22 July 2017

2017 International Humanitarian Conference

Technical Program

Thursday, July 20

Thursday, July 20, 08:30 - 09:30
Keynote1: Thursday morning

Ravi Karkara - Senior Advisor Strategic Partnership and Advocacy To the Assistant Secretary-General/Deputy Executive Director, UN Women, JMI, New York
Room: Auditorium (ENG103)

Thursday, July 20, 09:30 - 10:00

Break 1: Coffee Break - morning

Thursday, July 20, 10:00 - 12:00

TM01: Health and Well Being - I

Room: Auditorium (ENG103)
Chair: Maike Luiken (Lambton College, Canada)

10:00 *Towards a Low-cost Point-of-Care Screening Platform for Electronic Auscultation of Vital Body Sounds*
Uzair Mayat, Fayez Qureshi, Saad Ahmed, Yashodhan Athavale and Sridhar Krishnan (Ryerson University, Canada)
pp. 1-5

10:20 *Technology for Continuous Long-term Monitoring of Pregnant Women for Safe Childbirth*
George Endo, Ibukun Oluwayomi, Victor Alexandru, Yashodhan Athavale and Sridhar Krishnan (Ryerson University, Canada)
pp. 6-10

10:40 *Technological Aspects of Traumatic Spinal Cord Injury Rehabilitation*
Mariana C. Melo (Federal University of Uberlândia & Universidade de Uberaba, Brazil); Dhainner R Macedo (Federal University of Uberlandia, Brazil); Sridhar Krishnan (Ryerson University, Canada); Alcimar Soares (Universidade Federal de Uberlândia, Brazil)
pp. 11-15

11:00 *An Integrated Biosignals Wearable System for Low-Cost Blood Pressure Monitoring*
Toka Alnaser, Amnyah Almahouzi, Susanne Tiraei, Yashodhan Athavale and Sridhar Krishnan (Ryerson University, Canada)
pp. 16-20

11:20 *A Hybrid Wavelet Based K-Means Clustering Approach to Detect Intracranial Hypertension*
Parisa Naraei, Matyas Kenez and Alireza Sadeghian (Ryerson University, Canada)
pp. 21-25

11:40 *Wireless Body Area Network Development for Remote Patient Health Observing*
Abdul Salam Mahmood (Wasit University, Iraq); Essa Jafer (Princess Sumaya University for Technology, Jordan); Sattar Hussain (Centennial College & School of Engineering Technology and Applied Science, Canada); Xavier N. Fernando (Ryerson University, Canada)
pp. 26-31

IHTC 2017 Technical Program - cont.

TM02: Disaster Mitigation and Management

Room: ENG101
    Chair: A. N. K. Zaman (University of Guelph, Canada)

10:00 *Welcoming Syrian Refugees to Canada*
    Wendy Cukier (Ryerson University, Canada); Samantha Jackson (Research Associate, Diversity Institute, Canada)
    pp. 32-36
10:20 *Building with Straw in Post-Emergency Conditions: The Case of Haiti*
    Cottino Valeria (Architettura Senza Frontiere Piemonte, Italy); Carlo Ferraresi and Walter Franco (Politecnico di Torino, Italy); Annalisa Mosetto (Architettura Senza Frontiere Piemonte, Italy); Giuseppe Quaglia (Politecnico di Torino, Italy)
    pp. 37-41
10:40 *A Practical System for Optimized Assignment of Shelters to Evacuees*
    Liang Zhao (Kyoto University, Japan)
    pp. 42-45
11:00 *Earthquake Disaster Management Analysis in Dhaka*
    Md Ahmed and Hiroshi Morita (Osaka University, Japan)
    pp. 46-50
11:20 *Enhancing Autonomous Access Hole Detection*
    Ben Waismark, Alexander Ferworn and Jimmy Tran (Ryerson University, Canada)
    pp. 51-54
11:40 *Towards Determining Relative Densities for Common Unknown Explosives in Improvised Explosive Devices*
    Alexander Ferworn and Christopher Chan (Ryerson University, Canada)
    pp. 55-60

Thursday, July 20, 12:00 - 13:00

Lunch: Lunch

Thursday, July 20, 13:00 - 14:00

Keynote 2: Keynote 2 - Thursday afternoon

Ann Cavoukian - Executive Director, Ryerson University Privacy and Big Data Institute
Room: Auditorium (ENG103)

IHTC 2017 Technical Program - cont.

Thursday, July 20, 14:00 - 15:20

TA01: Health and Well Being - II

Room: Auditorium (ENG103)
Chair: Murray Macdonald (Exhibits, Canada)

14:00 *Benefits of Automatic Human Action Recognition in an Assistive System for People with Dementia*
Emilie Jean-Baptiste and Alex Mihailidis (University of Toronto, Canada)
pp. 61-65

14:20 *Detection of Heart Abnormalities via Artificial Neural Network: An Application of Self Learning Algorithms*
Maryam Rastgar-Jazi and Xavier N. Fernando (Ryerson University, Canada); Vino Shan (Health care Management Systems Inc, Canada)
pp. 66-69

14:40 *Device Integration Framework E-Health*
Elankayer Sithirasenan (Griffith University & The Secure Net, Australia); Adee Macdowell and Jake Araullo (Griffith University, Australia)

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15:00 *Boosting Physical and Psychological Well-Being in Rehabilitation Through Cognitive Technologies Preliminary Results*
Raffaella Folgieri (Unversità degli Studi di Milano, Italy); Claudio Lucchiari (Università degli Studi di Milano, Italy)
pp. 75-79

TA02: Education and Humanitarian Technology - I

Room: ENG101
Chair: Rozita Dara (University of Guelph, Canada)

14:00 *Intercultural Engineering Online: Getting Humanitarian Engineering on the Agenda*
Joyce van de Vegte (Camosun College, Canada)
pp. 80-84

14:20 *Exploring Anthropogenic Activities and Management Decisions Using a Novel Environmental Agent Based Model*
Devin Rose, Brandon P.M. Edwards, Ross Kett, Michael Yodzis, Justin Angevaare and Daniel Gillis (University of Guelph, Canada)
pp. 85-89

14:40 *A Novel Method for Assessing Broadband State at K-12 Schools*
Salam Ismaeel and Mirza Kamaludeen (Ryerson University, Canada); Carm Scarfo (Ontario, Canada); Soussan Tabari (Government of Ontario, Canada)
pp. 90-93

15:00 *The Education of Students About ISO/IEC 29110 Software Engineering Standards and Their Implementations in Very Small Entities*
Claude Laporte (Ecole de Technologie Superieure, Canada); Mirna Muñoz (Centro de Investigación en Matemáticas, Mexico); Bruel Gerançon (Institut Universitaire Quisquéya Amérique, Haiti)
pp. 94-98

IHTC 2017 Technical Program - cont.

Thursday, July 20, 14:00 - 16:00

TA03: Standards Workshop 14:00-16:30

Room: ENG102

Thursday, July 20, 15:20 - 15:40

Break II: Coffee Break - afternoon

Thursday, July 20, 15:40 - 17:00

TE01: Professional Presentations - I

Room: Auditorium (ENG103)
Chair: Adrian D.C. Chan (Carleton University, Canada))

15:40 *Giving Back: Tikkun Olam Makers as an Example and Toronto as a Rich Medium to Implement It.*
Maryam Abdullah - University of Calgary

16:00 *Monitor, Control & Forecast onsite energy resources and loads to optimize facilities performance and maximize energy savings*
Pratap Revuru

16:20 *Estimating Road and House Density of Refugee Camps from Aerial Imaging*
Hadi Jomaa, Mariette Awad

16:40 *Developing a Public-Policy Approach to the use of Social media monitoring during Humanitarian crises*
Agradip Dutta

TE02: Education and Humanitarian Technology - II

Room: ENG101
Chair: SM Kamruzzaman (Ryerson University, Canada)

15:40 *Data-Driven Technique to Estimate the Required Broadband Speed for K-12 Schools*
Mirza Kamaludeen and Salam Ismaeel (Ryerson University, Canada); Franca Petrocelli, Chris Carrington and Carm Scarfo (Ontario, Canada)
pp. 99-104

16:00 *A Low-cost Approach for Wide-spread Screening of Periodic Leg Movements Related to Sleep Disorders*
Sharadha Kolappan and Sridhar Krishnan (Ryerson University, Canada); Brian Murray and Mark Boulos (Division of Neurology, Canada)
pp. 105-108

16:20 *Proposal of an Educational Game for Improvement of Cognitive Performance of Intellectually Disabled People*
Letícia Segatto and Gustavo da Silva (Universidade de Uberaba, Brazil); Mariana C. Melo (Federal University of Uberlândia & Universidade de Uberaba, Brazil)
pp. 109-112

16:40 *Project Education-based Applied Technologies for Poverty Alleviation, Ending Hunger, Achieving Food Security and Promoting Sustainable Ag*
Reg Pecen (Go-Link Energy & A div of AMLx-Security, Inc., USA); Alan Maclachlan (Go-Link Energy, USA); Nonhlanhla Joye (Umgibe Farming Organics and Training Institute, South Africa)
pp. 113-118

IHTC 2017 Technical Program - cont.

Thursday, July 20, 19:00 - 22:00

YP: Young Professional Mixer

Room: Marche Outdoor Patio, Brookfield Place, 181 Bay St.

Friday, July 21

Friday, July 21, 08:30 - 09:30

Keynote 3: Keynote Friday Morning

Lee Maracle - ABS Instructor at University of Toronto
Room: Auditorium (ENG103)

Friday, July 21, 08:30 - 17:00

TS: SDG Training Session

Room: LIB72

Friday, July 21, 09:30 - 10:00

Break 1: Coffee Break - morning

Friday, July 21, 10:00 - 12:00

FM01: Professional Presentations - II

Room: Auditorium (ENG103)
    Chair: John Harris (J. Harris Consulting, USA)

10:00 *Virtual and Travelling Exhibitions on the History of Technology and Disability: Interdisciplinary Lessons of the Past for the Future*
    Beth A. Robertson, Dorothy J. Smith, Sandy Barron, Adrian D.C. Chan, George Duimovich, et al

10:30 *Demonstration of a Wave-powered Desalination System in Cape Verde*
    Bill Staby

10:50 *Sustainably Energizing Impoverished Communities*
    Lisa Oelke, Tanya Deer

11:10 *Directed Graph Optimization for Improving Fleet Management of Waste Water Removal in Refugee Camps*
    Hadi Jomaa, Mariette Awad

11:30 *Sustainable Cities: Towards Enabling Equitable Water Supply through Technology*
    M. S. Bhat

IHTC 2017 Technical Program - cont.

FM02: Information and Communication Technology for Humanity - I

Room: ENG101
Chair: Naimul M Khan (Ryerson University, Canada)

10:00 *Secure and Cost-Effective Remote Monitoring Health-Guard System*
Hussain Fatmi (Centennial College, Canada); Sattar Hussain (Centennial College & School of Engineering Technology and Applied Science, Canada); Ali Al-Rubaie (Centennial College, Canada)
pp. 119-123

10:24 *On D2D Communications for Public Safety Applications*
Ali Alnoman and Alagan Anpalagan (Ryerson University, Canada)
pp. 124-127

10:48 *Traffic Offloading Problem in Two-Tier Hetnets with D2D Support for Emergency Communication*
Anirudh Ravichandran (Bits Pilani University, India); Ali Alnoman (Ryerson University, Canada); Nitin Sharna (BITS Pilani, India); Alagan Anpalagan (Ryerson University, Canada)
pp. 128-132

11:12 *An Improved Differential Privacy Algorithm to Protect Re-identification of Data*
A. N. K. Zaman, Charlie Obimbo and Rozita Dara (University of Guelph, Canada)
pp. 133-138

11:36 *Wireless Energy Harvesting from Ambient Sources for Cognitive Networks in Rural Communities*
Arif Obaid and Xavier N. Fernando (Ryerson University, Canada)
pp. 139-143

Friday, July 21, 12:00 - 13:00   Lunch

Friday, July 21, 13:00 - 14:00

Keynote 4: Friday afternoon

Claudio Canizares - Hydro One Endowed Chair, Electrical and Computer Engineering (E&CE), University of Waterloo
Room: Auditorium (ENG103)

Friday, July 21, 14:00 - 15:20

FA01: Energy, Climate, and Sustainability - I

Room: Auditorium (ENG103)
Chair: Kyarash Shahriari (Lead Control Systems Engineer & IEEE Senior Member, Canada)

14:00 *Archimedes Screw Generators for Sustainable Energy Development*
Scott Simmons and William Lubitz (University of Guelph, Canada)
pp. 144-148

14:20 *A Comparative Assessment for Algal Biodiesel Production in the Philippines*
Ivan Henderson Gue, Aristotle Ubando and Alvin Culaba (De La Salle University, Philippines); Joel Cuello (University of Arizona, USA)
pp. 149-153

14:40 *Maximizing the Energy Harvested from Piezoelectric Materials for Clean Energy Generation*
Yasna Schifferli (University of Toronto, Canada)
pp. 154-160

15:00 *Urban Sustainability Through Emerging Technologies*
Bob Singh (Ryerson University, Canada)
pp. 161-166

IHTC 2017 Technical Program - cont.

FA02: Information and Communication Technology for Humanity - II

Room: ENG101
Chair: Vasily Grigorovsky (University of Toronto, Canada)

14:00 *Management Module Based on SNMP for a Warning Message Receiver Considering DTT and FM*
Marco Aurelio Jara Quispe, Alejandro Jose Llanos Garcia, Ronald Chavez Rojas, Zoser Quenaya Hinojosa, Armando Zaga Ttito and Ivan Santos Leon Gavino (INICTEL-UNI, Peru)
pp. 167-171

14:20 *Ad-Hoc Messaging Infrastructure for P2P Communication in Disaster Management*
Michael Lescisin (UOIT, Canada); Qusay Mahmoud (University of Ontario Institute of Technology, Canada)
pp. 172-176

14:40 *Recommended Broadband Capacity Estimation System for School Boards*
Mirza Kamaludeen and Salam Ismaeel (Ryerson University, Canada); Carm Scarfo and Chris Carrington (Ontario, Canada)
pp. 177-181

15:00 *Towards a Robust Rescue Network: Wireless Communication is the Choice*
Sattar Hussain (Centennial College & School of Engineering Technology and Applied Science, Canada); Predrag Pesikan (Centennial College, Canada); Xavier N. Fernando (Ryerson University, Canada)
pp. 182-187

FA03: Student Design Competion (14:00 - 17:00)

Room: ENG102
Chair: Salam Ismaeel

15:40 *An Integrated Biosignals Wearable System for Low-Cost Blood Pressure Monitoring*
Susanne Tiraei, Toka Alnaser, Amnyah Almahouzi

16:00 *eStethoscope – Towards a Low-cost Screening Platform*
Uzair Mayat, Fayez Qureshi, Saad Ahmed

16:20 *Intelligent Bin-Learn to sort-Sort to learn*
Thibisan Balachandran, Reza Mahzari, Kajen Rajasegaram

16:40 *UAV System for Fire Assessment Using Custom Sensor Fusion*
Alok Deshpande, Erik Johnson, Ann Gunaratnam, Calla McClelland, Mohamed Jaber, Fizza Ahmad Sheikh

Friday, July 21, 15:20 - 15:40

Break II: Coffee Break - afternoon

Friday, July 21, 15:40 - 17:00

FE01: Energy, Climate, and Sustainability - II

Room: Auditorium (ENG103)
Chair: Emanuel Istrate (University of Toronto, Canada)

15:40 *Microgrid Islanding and Grid Restoration with Off-the-Shelf Utility Protection Equipment*
William Edwards, Jr., Scott Manson and Jakov Vico (Schweitzer Engineering Laboratories, Inc., USA)
pp. 188-192

IHTC 2017 Technical Program - cont.

16:00 *Solar-powered Drip-Irrigation for Rural Bangladesh*
    Dewan Ishtiaque Ahmed and Xavier N. Fernando (Ryerson University, Canada)
    pp. 193-196
16:20 *IEEE Standard Review - Ethically Aligned Design: A Vision for Prioritizing Human Wellbeing with Artificial Intelligence and Autonomous Systems*
    Kyarash Shahriari (Lead Control Systems Engineer & IEEE Senior Member, Canada); Mana Shahriari (Laval University, Canada)
    pp. 197-201
16:40 *Promoting access to grid electricity for communities by using energy efficient transformer components within the Clean Development Mechanism*
    Sizwe Dhlamini, Innocent Davidson and Zijun Gong

FE02: Diverse Topics in Humanity

Room: ENG101
    Chair: Hugo Sanchez-Reategui (Consultant, Canada)

15:40 *A Virtual Marketplace for Goods and Services for People with Social Needs*
    Daniela Rosu, Dionne Aleman, J. Christopher Beck, Mark Chignell, Mariano Consens, Mark Fox, Michael Gruninger, Chang Liu, Yi Ru and Scott Sanner (University of Toronto, Canada)
    pp. 202-206
16:00 *Technologies in the Planning of Refugees' Camps*
    Elie Daher (Luxembourg Institute of Science and Technology, Luxembourg); Sylvain Kubicki (LIST, Luxembourg)
    pp. 207-212
16:20 *A New Alarming System for an Underground Mining Environment Using Visible Light Communications*
    Hasan Farahneh, Fatima Hussain and Xavier N. Fernando (Ryerson University, Canada)
    pp. 213-217
16:40 *Energy Harvesting Wireless Sensors for Smart Cities*
    SM Kamruzzaman, Xavier N. Fernando and Muhammad Jaseemuddin (Ryerson University, Canada)
    pp. 218-222

FE03: Student Design Competion (14:00 - 17:00)

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Friday, July 21, 19:00 - 22:00

Banquet: Awards Banquet▪

Room: Chelsea Hotel - 33 Gerrard St.