



45th Canadian Medical and Biological Engineering Conference Presentation Schedule

May 16th, 2023

10:10 AM – 10:35 AM (**poster session: Digital Health, Virtual Reality, and AI Education**):

- **An Automated Online Recommender System for Stroke Risk Assessment**
 - Shams Khan (Thompson Rivers University), Nour Dekhil (Concordia University), Ehsan Mamatjan (Thompson Rivers University), Safwat Hassan (University of Toronto), Yasin Mamatjan (Thompson Rivers University)
- **Design and Evaluation of a Virtual Reality-based Driving Task to Investigate Temporal Preparation**
 - Omid Ranjbar Pouya (Independent Researcher), Zahra Moussavi (University of Manitoba)
- **Artificial Intelligence Education for Medical Students: A Systematic Review**
 - Aryan Ghaffarizadeh (University of British Columbia), Nikola Pupic (University of British Columbia), Ricky Hu (Queen's University), Rohit Singla (University of British Columbia), Kathryn Darras (University of British Columbia), Anna Karwowska (University of Ottawa), Bruce B. Forster (University of British Columbia)

10:45 AM – 11:45 AM (**oral session: Computer-Assisted Diagnosis and Surgery, chair: Daniel Louie**):

- **Unsupervised Learning Using Time-Domain and Frequency-Domain Features of Audio Signals for the Classification of Mild Cognitive Impairment**
 - Hong-Han (Hank) Chau (Yuan Ze University, Taiwan), Yawgeng Chau (Yuan Ze University, Taiwan)
- **Selecting the Most Characteristic Vestibular Stimuli to be Used for Alzheimer's Subtype Diagnosis**
 - Sadeqh Marzban (University of Manitoba), Zeinab Dastgheib (University of Manitoba), Brian Lithgow (University of Manitoba), Zahra Moussavi (University of Manitoba)
- **The Vasculens – Projector-Based Augmented Reality Display of Anatomical Structures Segmented from Pre-Operative CT Scans**
 - Joshua Ho (University of British Columbia), Michael J. Stein (Lenox Hill Hospital, New York), Michael Martin (University of British Columbia), Kathryn Isaac (University of British Columbia), Philip Edgcumbe (University of British Columbia)

1:30 PM – 2:50 PM (**oral session: Machine Learning for Image and Signal Analysis, chair: Roger Tam**):

- **Deep Learning Model for OSA Detection using Tracheal Breathing Sounds During Wakefulness**
 - Ali Mohammad Alqudah (University of Manitoba), Zahra Moussavi (University of Manitoba)



- **Using Deep Learning to Estimate Frame-to-Frame Angle Displacements in 2D Ultrasound Image Sequences of an Infant Hip**
 - Ammarah Kaderdina (University of British Columbia), María José Bontá Suárez (University of British Columbia), Rafeef Garbi (University of British Columbia), Emily Schaeffer (British Columbia Children's Hospital), Kishore Mulpuri (British Columbia Children's Hospital), Antony Hodgson (University of British Columbia)
- **Frequency Bias in MLM-trained BERT Embeddings for Medical Codes**
 - Trevor Yu (University of Waterloo), Tia Tuinstra (University of Waterloo), Bing Hu (University of Waterloo), Ryan Rezai (University of Waterloo), Thomas Fortin (University of Waterloo), Rachel DiMaio (University of Waterloo), Brian Vartian (McMaster University), Bryan Tripp (University of Waterloo)
- **Segmentation of retinal layers on OCT scans using deep learning**
 - Inès Giraud (École de technologie supérieure), Luc Duong (École de technologie supérieure)

3:00 PM – 3:30 PM (**poster session: Machine Learning for Image and Signal Analysis**):

- **Fusion of Manual and Deep Learning Analyses for Automatic Lung Respiratory Sounds Identification in Youth**
 - Behrad TaghiBeyglou (University of Toronto), Atousa Assadi (University of Toronto), Ahmed Elwali (University of Toronto), Azadeh Yadollahi (University of Toronto)
- **Deep Learning Model for COPD Classification/Staging Using Lung CT**
 - Halimah Alsurayhi (Western University), Abbas Samani (Western University)
- **MR Image Prediction at High Field Strength from MR Images Taken at Low Field Strength Using Multi-To-One Translation**
 - Fatemeh Bagheri (University Health Network), Kamil Uludag (University of Toronto)
- **Reconstruction of the Stress-free Hyperelastic Parameters of Breast Tissue: Machine-Learning Based Inverse Problem Technique**
 - Xi Feng (Western University), Abbas Samani (Western University)
- **Novel Technique for Simultaneous Imaging of the Breast Stiffness and Incompressibility Using Quasi-Static Elastography**
 - Matthew Caius (Western University), Abbas Samani (Western University)
- **Automatic Evaluation of the Ejection Fraction on Echocardiography Images**
 - Alexandre Aubry (École de technologie supérieure), Luc Duong (École de technologie supérieure)



May 17th, 2023

10:10 AM – 10:35 AM (**poster session: Wearable and Implantable Sensors**):

- **Hyperspectral Imaging-based monitoring for Radiotherapy Induced Skin-Toxicity**
 - Ramy Mohammed (Military Technical College, Egypt), Yehia Abdlaty (Egyptian Technical Research Center)
- **Towards User-Independent Physiological Emotion Recognition**
 - Prerana Keethri (McMaster University), Stefanie Blain-Moraes (McGill University)
- **Where? Evaluation of Source-Detector Position in Spatially Resolved Spectroscopy**
 - Garrett Frank (University of British Columbia), Katharina Raschdorf (University of British Columbia), Ali Zaidi (International Collaboration on Repair Discoveries), Brian Kwon (University of British Columbia), Babak Shadgan (University of British Columbia)
- **Investigating the Relationship Between Prefrontal Cortex Oxygenation and Locomotor Muscle Oxygenation During Incremental Exercise Using Near-Infrared Spectroscopy**
 - Mehdi Nouri Zadeh (University of British Columbia), Aaron J. Mah (University of British Columbia), Justin K. M. Wyss (University of British Columbia), Jordan Johnson (University of British Columbia), Stefan Lazarevik (University of British Columbia), Babak Shadgan (University of British Columbia)
- **Wearable Microfluidic Sweat pH Sensor**
 - Kirankumar Kuruvinashetti (University of Calgary), Fereshteh Vajhadin (University of Calgary), Pezhman Jalali (University of Calgary), David Rosenegger (University of Calgary), Amir Sanati Nezhad (University of Calgary), Amin Komeili (University of Calgary)
- **Can Heart-Rate Monitors Predict Muscle Anaerobic Threshold during Intense Exercise?**
 - Justin K. M. Wyss (University of British Columbia), Aaron J. Mah (University of British Columbia), Mehdi Nouri Zadeh (University of British Columbia), Jordan Johnson (University of British Columbia), Stefan Lazarevik (University of British Columbia), Babak Shadgan (University of British Columbia)

10:45 AM – 12:05 PM (**oral session: Wearable and Implantable Sensors, chair: Babak Shadgan**):

- **The Development of Soft Capacitive-based Pressure and Shear Sensor Arrays for the Prevention of Pressure Injuries**
 - Justin K. M. Wyss (University of British Columbia), Kieran Morton (University of British Columbia), Jian Gao (University of British Columbia), Sadan M. Wani (University of British Columbia), Huron Yin (University of British Columbia), Jacinta Li (University of British Columbia), Yiting Wu (University of British Columbia), Anindya L. Roy (University of British Columbia), Adriana Cowan (University of British Columbia),



Junheng Zhao (University of British Columbia), Daniel Zhou (University of British Columbia), Jason Y. S. Chow (University of British Columbia), Berti Argun (University of British Columbia), Harsh Rajoria (University of British Columbia), Mika Nogami (University of British Columbia), John D. W. Madden (University of British Columbia)

- **Blood Flow Restriction Therapy: The Essential Value of Accurate Surgical-Grade Tourniquet Autoregulation**
 - Tom Lai (Western Clinical Engineering Ltd.), Luke Hughes (Northumbria University), UK, James McEwen (Western Clinical Engineering Ltd.)
- **Smart Hydrogel Probes to Measure Complex Tissue Mechanics Within Engineered Tumors**
 - Benjamin E. Campbell (McGill University), Christina Boghdady (McGill University), Stephanie Mok (McGill University), Luke McCaffrey (McGill University), Christopher Moraes (McGill University)
- **Video-Based Face and Facial Landmark Tracking for Neonatal Vital Sign Monitoring**
 - Ethan Grooby (Monash University), Chiranjibi Sitaula (Monash University), Soodeh Ahani (University British Columbia), Liisa Holsti (University British Columbia), Atul Malhotra (Monash University), Guy A. Dumont (University British Columbia), Faezeh Marzbanrad (Monash University)

3:00 PM – 3:30 PM (**poster session: Biomechanics and Bioactive Metabolites**):

- **Automated Segmentation of Knee MR Images for Biomechanical Modeling of the Knee Joint**
 - Reza Kakavand (University of Calgary), Mehrdad Palizi (University of Alberta), Neha Gianchandani (University of Calgary), Samer Adeeab (University of Alberta), Roberto Souza (University of Calgary), W. Brent Edwards (University of Calgary), Amin Komeili (University of Calgary)
- **Re-establishing Impact Speed Requirements for Inducing Commotio Cordis**
 - Grant J. Dickey (Western University), Sakib U. Islam (Western University), Kewei Bian (Western University), Haojie Mao (Western University)
- **Influence of Bone Microarchitecture on the Stressed Volume of Equine Subchondral Bone**
 - Andrew Koshyk (University of Calgary), Holly Sparks (University of Calgary), W. Michael Scott (University of Calgary), W. Brent Edwards (University of Calgary)
- **Exploring Walking Entrainment with Vertical Force Oscillations**
 - Ryan Schroeder (University of Calgary), James Croft (University of Calgary), John Bertram (University of Calgary)
- **Two-Stage Cultivation: An Innovative Method for Augmented Bioactive Metabolites Production from Euryhaline Microalgal Species for Their Utilization in Nutraceuticals**
 - Manpreet Kaur (Punjab Agricultural University), Surekha Bhatia (Punjab Agricultural University), Urmila Gupta (Punjab Agricultural University)



3:45 PM – 5:05 PM (**oral session: Biomechanics, chair: Carly Jones**):

- **Experimental Study on Surface Quality of Hole and Biological Damage in Bone in Drilling**
 - Khurshid Alam (Sultan Qaboos University), Muhammad Iqbal (Sultan Qaboos University), B. Al-Sumri (Sultan Qaboos University), Mohamed Al-Kindi (Sultan Qaboos University), Yasasween Hewavidana (Loughborough University), Vadim Silberschmidt (Loughborough University)
- **Knee Joint Mechanics Predicted by Subject-specific and Generic Models**
 - Ruoqi Deng (University of Calgary), LePing Li (University of Calgary)
- **Investigation of the Heterogeneous Mechanical Properties of the Intact and GAG-depleted Thoracic Aortic Tree using Indentation**
 - Noor Ghadie (University of Ottawa), Jean-Philippe St-Pierre (University of Ottawa), Michel Labrosse (University of Ottawa)
- **A Computational Framework to Model the Lifecycle of a Breakthrough Neurovascular Implant: Crimping into Catheter and Deployment Mechanisms**
 - Mehdi Jahandardoost (University of British Columbia), Donald Ricci (eVasc Neurovascular Enterprises), Abbas Milani (University of British Columbia), Mohsen Jahandardoost (University of Nevada), Dana Grecov (University of British Columbia)



May 18th, 2023

10:10 AM – 10:35 AM (**poster session: Microscale Modelling and Fluidics**):

- **First Complete Anatomical Analysis of the Entire Cochlea at a Sub-Millimeter Resolution Using Synchrotron-Radiation Phase-Contrast Imaging**
 - Ashley Micuda (Western University), Seyed A. Rohani (Western University), Luke Helpard (Western University), Sumit Agrawal (Western University), Hanif Ladak (Western University)
- **Microfluidic Micromixing by Micropost-Based Acoustic Microstreaming**
 - Bahareh Chaichypour (Toronto Metropolitan University), Sinthuran Jegatheeswaran (St. Michael's Hospital, Toronto), Ali Salari (University of Toronto), Dae Kun Hwang (Toronto Metropolitan University), Michael Kolios (Toronto Metropolitan University), Scott Tsai (Toronto Metropolitan University)

10:45 AM – 12:05 PM (**oral session: Tissue Engineering, chair: Michael Kallos**):

- **Visualization of Fibrillar Collagen Networks Using Label-Free Nonlinear Optical Microscopy: Deciphering the ECM Structure of 3D-Bioprinted Constructs**
 - Shahad Shakir (Carleton University), Y. Betty Li (National Research Council of Canada), C. Harry Allen (Carleton University), Sangeeta Murugkar (Carleton University), Leila Mostaço-Guidolin (Carleton University)
- **Expansion of Human Skin-Derived Schwann Cells in Stirred Suspension Bioreactors**
 - Alexis Pawluk (University of Calgary), Brett Abraham (University of Calgary), Erin Roberts (University of Calgary), Tak Ho Chu (University of Calgary), Rajiv Midha (University of Calgary), Michael Kallos (University of Calgary)
- **A Strategy to Improve Image Quality of Low-Dose Synchrotron Radiation CT Imaging for Tissue Engineering Applications**
 - Xiaoman Duan (University of Saskatchewan), Xiongbiao Chen (University of Saskatchewan), Ning Zhu (University of Saskatchewan)
- **Fabrication of Different Forms of Chitosan-Coated Alginate Fibers on a Single Microfluidic Platform**
 - Niloofar Ghasemzaie (Toronto Metropolitan University), Morteza Jeyhani (Toronto Metropolitan University), Scott Tsai (Toronto Metropolitan University)

1:40 PM – 3:00 PM (**oral session: Biosensors, Biomarkers, and Bubbles, chair: Adel Yavarinasab**):

- **An Electrochemically-Active Biosensor to Study the Development of Biofilm in Wild-Type and Fimbriae-Deficient E. coli Mutants**
 - Adel Yavarinasab (University of British Columbia), Jerry He (University of British Columbia), Carolina Tropini (University of British Columbia)
- **Volatile Sputum Biomarkers Can Monitor the Response to Treatment of Nontuberculous Mycobacteria Disease: A Pilot Study**



THE CANADIAN MEDICAL AND BIOLOGICAL ENGINEERING SOCIETY

LA SOCIÉTÉ CANADIENNE DE GÉNIE BIOMÉDICAL

- Antao Gao (University of British Columbia), Ahmad Mani-Varnosfaderani (University of British Columbia), Katie Poch (National Jewish Health, USA), Silvia M. Caceres (National Jewish Health, USA), Jerry A. Nick (National Jewish Health, USA), Jane E. Hill (University of British Columbia)
- **Impact of Multiple Responses to a Single Sonication when Determining Nanobubble Contrast Agent Characteristics**
 - Michael Smith (University of Calgary), Carly Pellow (University of Calgary)
- **Optimization of Intracellular Genetic and Non-genetic Cargo Delivery using Clinical Ultrasound and Microbubbles**
 - Kushal Joshi (Toronto Metropolitan University), Scott Tsai (Toronto Metropolitan University), Warren L. Lee (University of Toronto)

Poster with no assigned time

- **International Conference on Biofabrication**
 - Daniel Chen (University of Saskatchewan)