

# **2019 IEEE EMBS International Conference on Biomedical & Health Informatics (BHI 2019)**

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## Monday, May 20

**10:05 - 11:35**

**BHI Session #1: Biomedical Signal Processing Informatics I**

**Room:** Meeting Room DE

**Chairs:** Kai Keng Ang (Institute for Infocomm Research, A\*STAR, Singapore), Taufiq Hasan (Bangladesh University of Engineering and Technology, Bangladesh)

10:05

**Towards EEG Generation Using GANs for BCI Applications.....1**

Fatemeh Fahimi (Nanyang Technological University & Institute for Infocomm Research, A\*STAR, Singapore); Zhuo Zhang (Institute for Infocomm Research, Singapore); Boon W Goh (Nanyang Technological University, Singapore); Kai Keng Ang (Institute for Infocomm Research, A\*STAR, Singapore); Cuntai Guan (Nanyang Technological University, Singapore)

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**10:05 - 11:35**

**BHI Special Session #1: Nonparametric Statistics in Omics Applications**

**Room:** Meeting Room GH

**Chairs:** Ahmed A. Metwally (Stanford University, USA), Alan Perez-Rathke (University of Illinois at Chicago, USA)

10:05

**Controlling the false discovery rate in genomics research.....N/A**

Yanrong Ji (Northwestern University, USA); Ramana Davuluri (Northwestern University & Feinberg School of Medicine, USA); Sudesh Pundir (Pondicherry University, India)

10:20

**The Digital Biomarker Discovery Pipeline.....N/A**

Jessilyn Dunn, Shenghong Zhao and Ikponmwoosa Ogbeide (Duke University, USA); Ryan Runge (University of California, San Francisco, USA)

10:35

**Statistical Methods for Analyzing Microbiome Data.....N/A**

Yinglin Xia (University of Illinois at Chicago, USA)

10:50

**Nonparametric Longitudinal Analysis of Omics Data.....N/A**

Ahmed A. Metwally and Michael Snyder (Stanford University, USA)

11:05

**Bayesian Nonparametric Multi-Population Deconvolution Model for Hi-C Data.....N/A**

Alan Perez-Rathke (University of Illinois at Chicago, USA); Valentina Boeva (Institut Cochin, France); Jie Liang (University of Illinois at Chicago, USA)

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**Identifying Somatic Mutation Profiles via Power Law in Variational Autoencoder.....N/A**

Rahul Mehta (University of Illinois at Chicago, USA)

**11:55 - 13:25**

**BHI Session #2: Biomedical Signal Processing Informatics II**

**Room:** Meeting Room DE

**Chairs:** RamasubbaReddy Machireddy (IITM, India), Gert Mertes (University of Oxford, United Kingdom (Great Britain) & KU Leuven, Belgium)

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**11:55 - 13:25**

**BHI Special Session #2: AI Techniques for Multi-Modality Medical Big Data**

**Room:** Meeting Room GH

**Chairs:** Raffaele Gravina (University of Calabria, Italy), Ye Li (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)

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**Multi-sensor Data Fusion for Emergency Prediction in Smart BAN-enabled Environments.....N/A**

Raffaele Gravina and Giancarlo Fortino (University of Calabria, Italy)

12:10

**Learning the Computer-Aided Prescription Model for Parkinson's Disease.....N/A**

Yinghuan Shi (Nanjing University, P.R. China)

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**An Algorithm Strategy for Precise Patient Monitoring.....N/A**

Xiao Hu (University of California at San Francisco, USA)

12:40

**AI-driven Cuff-less Blood Pressure Measurement.....N/A**

Fen Miao, Zengding Liu and Bo Wen (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)

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Jinhua Yu (Fudan University, P.R. China)

**15:35 - 17:05**

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**Room:** Meeting Room DE

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**15:35 - 17:05**

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**Room:** Meeting Room GH

**Chairs:** Ramana Davuluri (Northwestern University & Feinberg School of Medicine, USA), Kamal Taha (Khalifa University of Science, Technology & Research, United Arab Emirates)

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# Tuesday, May 21

8:50 - 10:20

## BHI Session #5: Big Data Analytics & Machine Learning II

Room: Meeting Room AB

Chairs: Ertan Balaban (The University of Manchester, United Kingdom (Great Britain)), Chien-Liang Liu (National Chiao Tung University, Taiwan)

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### [Utilizing Consumer-grade Wearable Sensors for Unobtrusive Rehabilitation Outcome Prediction.....383](#)

Gina Sprint (Gonzaga University, USA); Diane J. Cook (Washington State University, USA); Douglas Weeks (St. Luke's Rehabilitation Institute, USA); Jason Conci (Gonzaga University, USA)

9:05

### [Implementation of a batch normalized deep LSTM recurrent network on a smartphone for human activity recognition.....387](#)

Ertan Balaban and Alexander J Casson (The University of Manchester, United Kingdom (Great Britain))

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### [Serverless Data Parallelization for Training and Retraining of Deep Learning Architecture in Patient-Specific Arrhythmia Detectio\) UF](#)

Amit Juneja and Michael Marefat (University of Arizona, USA)

9:35

### [Large-scale Classification of 12-lead ECG with Deep Learning.....395](#)

Yu-Jhen Chen, Chien-Liang Liu and Vincent S. Tseng (National Chiao Tung University, Taiwan); Yu-Feng Hu and Shih-Ann Chen (Taipei Veterans General Hospital, Taiwan)

9:50

### [Integrating word embedding neural networks with PubMed abstracts to extract keyword proximity of chronic diseases.....399](#)

Ahmad P. Tafti, Yanshan Wang, Feichen Shen, Elham Sagheb, Paul Kingsbury and Hongfang Liu (Mayo Clinic, USA)

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### [Graph Kernel Prediction of Drug Prescription.....403](#)

Hao-Ren Yao, Der-Chen Chang and Ophir Frieder (Georgetown University, USA); Wendy Huang (Meng Cheng Family Medicine Clinic, Taiwan); Tian-Shyug Lee (Fu Jen Catholic University, Taiwan)

8:50 - 10:20

## BHI Special Session #3: Genome Security & Privacy

Room: Meeting Room GH

Chair: Gamze Gursoy (Yale University, USA)

8:50

### [Blockchain-based Privacy-preserving Predictive Modeling on Genomic/Healthcare Data.....N/A](#)

Tsung-Ting Kuo (University of California San Diego, USA); Lucila Ohno-Machado (University of California San Diego, La Jolla, California, USA; VA San Diego Healthcare System, La Jolla, California, USA)

9:05

### [The prediction of human physical appearance from DNA: current & newly emerging traits.....N/A](#)

Susan Walsh (IUPUI, USA)

9:20

### [Homomorphic Encryption for Protecting Genome Privacy.....N/A](#)

Miran Kim (United States & University of Texas, Health Science Center at Houston, USA)

9:35

### [Inverse Regression for Extraction of Tumor Site From Cancer Pathology Reports.....407](#)

Abhishek K Dubey (Oak Ridge National Lab, USA); Hong-Jun Yoon and Georgia Tourassi (Oak Ridge National Laboratory, USA)

9:50

### [Quantification of sensitive information leakage from functional genomics data.....N/A](#)

Mark Gerstein (Yale University, USA)

**12:40 - 14:10**

**BHI Session #6: Imaging Informatics I**

**Room:** Meeting Room DE

**Chairs:** Jonas E Malmsten (Weill Cornell Medicine & Pace University, USA), Diego Sona (Istituto Italiano di Tecnologia, Italy)

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**Automated cell stage predictions in early mouse and human embryos using convolutional neural networks.....411**

Jonas E Malmsten (Weill Cornell Medicine & Pace University, USA); Nikica Zaninovic, Qiansheng Zhan and Zev Rosenwaks (Weill Cornell Medicine, USA); Juan Shan (Pace University, USA)

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**Augmenting Frame-based with Window-based Features for C. elegans Movement Classification.....415**

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**12:40 - 14:10**

**BHI Special Session #4: Wearable Sensor Informatics for Cardiopulmonary Monitoring**

**Room:** Meeting Room GH

**Chairs:** Jin-Oh Hahn (University of Maryland, USA), Omer T Inan (Georgia Institute of Technology, USA)

12:40

**Blood Pressure Tracking with Wearable Wrist Ballistocardiography.....N/A**

Peyman Yousefian and Sungtae Shin (University of Maryland, USA); Azin Mousavi (Amirkabir University of Technology, Iran); Chang-Sei Kim (Chonnam National University & School of Mechanical Engineering, Korea); Barry Finegan (University of Alberta, Canada); M Sean McMurtry (University of Alberta, USA); Rama Mukkamala (Michigan State University, USA); Dae-Geun Jang (Korea Advanced Institute of Science and Technology, Korea); Byung-hoon Ko (Samsung Advanced Institute of Technology, Korea); Jongwook Lee (SAIT, Korea); Uikun Kwon (Samsung Electronics, Korea); Youn Ho Kim (SAIT, Korea); Jin-Oh Hahn (University of Maryland, USA)

12:55

**Toward Remote Congestive Heart Failure Management using Calf Bioimpedance Measurements.....N/A**

Maggie Delano and Ke Wang (Swarthmore College, USA); Charles Sodini (Massachusetts Institute of Technology, USA)

13:10

**A Mixed-Filter Algorithm for Arousal Tracking from Galvanic Skin Response and Heart Rate Measurements.....N/A**

Dilranjan Wickramasuriya and Rose T. Faghih (University of Houston, USA)

13:25

**Smartphone Blood Pressure Monitoring.....N/A**

Anand Chandrasekhar and Keerthana Natarajan (Michigan State University, USA); Chang-Sei Kim (Chonnam National University, Korea); Mohammad Yavarimanesh and Mohammed Naji (Michigan State University, USA); Jin-Oh Hahn (University of Maryland, USA); Rama Mukkamala (Michigan State University, USA)

13:40

**Wearable Seismocardiography for Human Health and Performance.....N/A**

Mobashir Shandhi (Georgia Tech, USA); Mozziyar Etemadi and J. Alex Heller (Northwestern University, USA); Liviu Klein and Joanna Fan (University of California, San Francisco, USA); Sinan Hersek and Omer T Inan (Georgia Institute of Technology, USA)

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**Poster Session #2**

**Room: Main Hall C**

**BHI-T-1: Rescue Carbohydrate Suggestion Algorithm for Physical Activity in Type-1 Diabetes.....N/A**

Mert Sevil, Iman Hajizadeh, Mudassir Rashid and Sediqeh Samadi (Illinois Institute of Technology, USA); Mohammad Reza Askari (Illinois Institute of Technology, USA); Ali Cinar (Illinois Institute of Technology, USA)

**BHI-T-2: Psychological Stress Detection Using Photoplethysmography.....N/A**

Mert Sevil and Mudassir Rashid (Illinois Institute of Technology, USA); Mohammad Reza Askari (Illinois Institute of Technology, USA); Sediqeh Samadi, Iman Hajizadeh and Ali Cinar (Illinois Institute of Technology, USA)

**BHI-T-3: Leveraging Wearable Physical Activity Trackers to Improve Glucose Predictions for Personalized Medicine.....N/A**

Mert Sevil, Iman Hajizadeh, Mudassir Rashid, Zacharie Maloney, Sediqeh Samadi and Rachel Brandt (Illinois Institute of Technology, USA); Mohammad Reza Askari (Illinois Institute of Technology, USA); Nicole Hobbs (Illinois Institute of Technology, USA); Minsun Park and Laurie Quinn (University of Illinois at Chicago, USA); Ali Cinar (Illinois Institute of Technology, USA)

**BHI-T-4: Mobile Application for Automated Insulin Delivery with Integrated Physical Activity Sensors.....N/A**

Caterina Lazaro, Mudassir Rashid, Mert Sevil, Iman Hajizadeh and Jeremy Hajek (Illinois Institute of Technology, USA); Erdal Oruklu (IIT, USA); Ali Cinar (Illinois Institute of Technology, USA)

**BHI-T-5: Predicting Patients Vulnerable to Short-Term Readmission.....N/A**

Minjung Kim and Sara Tabatabai (UConn School of Medicine, USA)

**BHI-T-6: Proposal of Health Index Measurement Using RGB Video Images.....N/A**

YU Ochiai (University of Ritsumeikan, Japan); Taiki Fujita (Ritsumeikan University, Japan)

**BHI-T-7: BESI-C: Behavioral and Environmental Sensing and Intervention for Cancer.....N/A**

James A Hayes and Ridwan Alam (University of Virginia, USA); Nutta Homdee (University of Virginia; Link Lab, USA); John Lach, Virginia LeBaron and Katherine Gordon (University of Virginia, USA)

**BHI-T-8: Clustering single cell RNA-seq data using sparse autoencoders for dimension reduction.....N/A**

Shang Gao, Derek Reiman and Yang Dai (University of Illinois at Chicago, USA)

**BHI-T-9: Chronic Kidney Disease Stage Classification from Renal Artery Doppler Image.....N/A**

Chun-Wei Hsieh (National Taiwan Ocean University, Taiwan); Munkhjargal Gochoo (National Taiwan Ocean University, Taiwan; Mongolian University of Science and Technology, Mongolia); Chien-Hung Lee and Yung-Chih Chen (Chang-Gung Memorial Hospital, Taiwan)

**BHI-T-10: Development of Supporter for Tennis Elbow Prevention Using Viscoelasticity Component.....N/A**

Kazuma Fukuhara and Shima Okada (Ritsumeikan University, Japan); Masaaki Makikawa (College of Science and Engineering, Ritsumeikan University, Japan)

**BHI-T-11: Virtual-Interviewer: A Conversational Agent Designed to Facilitate Cognitive Health Screening in Older Adults.....N/A**

Shahla Farzana and Natalie Parde (University of Illinois Chicago, USA)

**BHI-T-12: Ballistocardiographic estimation of cardiac ejection curve for heartbeat detection.....N/A**

Moein Enayati (University of Missouri, Columbia, USA); Marjorie Skubic (University of Missouri, USA); Nasibeh Zanjirani Farahani (University of Missouri, Columbia, USA)

**BHI-T-13: Opinions and Awareness Regarding the Use of Virtual and Augmented Reality Technologies in Healthcare.....N/A**

Paris Gallos (National and Kapodistrian University of Athens, Greece); Charalabos Georgiadis (Aristotle University of Thessaloniki, Greece); Joseph Liaskos (National and Kapodistrian University of Athens, Greece); John Mantas (Health Informatics & IMIA, Greece)

**BHI-T-14: CrowdHEALTH Project: Big Data Analytics Combined with Holistic Health Records for Healthcare Policy Making.....N/A**

Paris Gallos (European Federation for Medical informatics, Lausanne, Switzerland); Serge Autexier (DFKI, Germany); Athanasios Kiourtis and Dimosthenis Kyriazis (University of Piraeus, Greece); Mitja Lustrek (Jozef Stefan Institute, Slovenia); Ilias Maglogiannis (University of Piraeus, Greece); John Mantas (European Federation for Medical informatics, Lausanne, Switzerland); Argyro Mavrogiorgou (University of Piraeus, Greece); Andreas Menychtas (BioAssist S.A., Greece); Vassilis Plagianakos (NOHS (EOPYY), Greece)

**BHI-T-15: Circadian rhythm Estimation Using Smart Wear.....N/A**

Hazuki Masuda, Junshi Inoue, Shima Okada and Naruhiro Shiozawa (Ritsumeikan University, Japan); Masaaki Makikawa (College of Science and Engineering, Ritsumeikan University, Japan)

**BHI-T-16: A Multimodal Deep Learning Framework for Influential Feature Selection and Prediction of Antigen Glycosylation.....N/A**

Saisubramaniam Gopalakrishnan (National University of Singapore & Institute for Infocomm Research, ASTAR\*, Singapore); Venkata Krishnan Venkateswara (National University of Singapore, ASTAR\*, Singapore); Jingyi Liao (National University of Singapore, A\*STAR, Singapore); Songyou Peng, Zhang Le, Swan Ho Ying and Zeng Zeng (A\*STAR, Singapore)

**BHI-T-17: Two-stage pneumonia detection through object detection and patch classification.....N/A**

Sin Teo (Institute for Infocomm Research, Singapore); Yiling Chong (National University of Singapore, Singapore); Zeng Zeng (A\*STAR, Singapore)

**BHI-T-18: Bone Age Assessment based on Finger joint Localization.....N/A**

Zhang Xiaoman and Zhao Ziyuan (National University of Singapore, Singapore); Cen Chen (Hunan University, P.R. China); Le Zhang and Peng Songyou (I2R, Singapore); Min Wu (Institute for Infocomm Research, Singapore); Zhongyao Cheng (I2R, Singapore); Sin Teo (Institute for Infocomm Research, Singapore); Zeng Zeng (A\*STAR, Singapore)

**BHI-T-19: Monitoring Kinetic Estimated Glomerular Filtration Rate is Associated with Improved Vancomycin Dosing to Target.....N/A**

Mohammad Samie Tootooni, Erin Barreto, Danette Bruns, Kianoush Kashani and Kalyan Pasupathy (Mayo Clinic, USA)

**BHI-T-20: SmartDiagnostics: A Mobile Application for the Monitoring and Management of Movement Disorders.....N/A**

Aparimit Chandra, Renos Zabounidis, Karine Tung and Hee-Tae Jung (University of Massachusetts Amherst, USA); Jean-Francois Daneault (Rutgers University, USA); Sunghoon Ivan Lee (University of Massachusetts, USA)

**BHI-T-21: Power Spectral Change of EEG by Pink Noise Presentation.....N/A**

Taiki Fujita (Ritsumeikan University, Japan)

**BHI-T-22: Use of the Fitbit for Free-Living Heart Rate Monitoring.....N/A**

Sophia Frohna (Northern Arizona University, USA); Greg Dominick (University of Delaware, USA); Kyle Winfree (Northern Arizona University, USA)

**BHI-T-23: Heart Rate Estimation from Wristband Photoplethysmography.....N/A**

Mohammad Reza Askari (400 E. 33rd Street & Illinois Institute of Technology, USA); Mudassir Rashid, Mert Sevil, Iman Hajizadeh, Sediqeh Samadi and Ali Cinar (Illinois Institute of Technology, USA)

**BHI-T-24: A Novel Personalized Method for Detecting MNA in Smartphone PPG Signals.....N/A**

Fatemehsadat Tabei and Jo Woon Chong (Texas Tech University, USA)

**BHI-T-25: A multimodal sensor fusion platform for objective assessment of motor states in Parkinson's disease.....N/A**

Mevludin Memedi (Örebro University, Sweden); Somayeh Aghanavasi (Dalarna University, Sweden); Filip Bergquist (Gothenburg University, Sweden); Dag Nyholm and Marina Senek (Uppsala University, Sweden)

**BHI-T-26: A Novel Parallel Lattice Boltzmann Method on Large Scale Medical Image Segmentation.....N/A**

Fei Ge (INSA Lyon, France); Guy Courbebaisse (Institut National des Sciences Appliquées de Lyon, France)

**BHI-T-27: Design and Development of Low-Cost Arduino-Based Electromyography for Home-Based Post-Stroke Rehabilitation.....N/A**

Idongesit Ekerete (Ulster University, United Kingdom (Great Britain)); Andrew Kerr (University of Strathclyde, United Kingdom (Great Britain))

**BHI-T-28: Unobtrusive Measurement of Upper Extremity Velocity During Post-Stroke Rehabilitation Exercises.....N/A**

Oonagh Giggins (Dundalk Institute of Technology, Rep. of Ireland, Ireland); Matias Garcia-Constantino (Ulster University, United Kingdom (Great Britain)); Chris Nugent and James McLaughlin (University of Ulster, United Kingdom (Great Britain)); Idongesit Ekerete (Ulster University, United Kingdom (Great Britain))

**BHI-T-29: Unobtrusive Monitoring of Home-Based Post-Stroke Rehabilitation Exercises Using Heterogeneous Sensors.....N/A**

Idongesit Ekerete (Ulster University, United Kingdom (Great Britain)); Oonagh Giggins (Dundalk Institute of Technology, Rep. of Ireland, Ireland); Ian Cleland (Ulster University, United Kingdom (Great Britain)); Chris Nugent and James Mclaughlin (University of Ulster, United Kingdom (Great Britain))

**BHI-T-30: A Fusion Approach for Automated Surgical Skill Assessment.....N/A**

Krittameth Teachasrisaksakul (Imperial College London, United Kingdom (Great Britain)); Surapa Thiemjarus and Sanparith Marukatat (National Electronics and Computer Technology Center, Thailand); Guang-Zhong Yang (Imperial College London, United Kingdom (Great Britain)); Benny Lo (Imperial College, United Kingdom (Great Britain))

**BHI-T-31: Estimation of Total Body Water using Bioelectrical Impedance Analysis.....N/A**

Mst Farzana Khatun (Rajshahi University of Engineering & Technology, Bangladesh); Tahasin Ahmed Fahim (Rajshahi University of Engineering & Technology, Bangladesh); Sajib Sen (University of Memphis, USA); Md Sohel Rana (Rajshahi University of Engineering & Technology, Bangladesh)

**BHI-T-32: Linear Regression Models for Extracellular Fluid Measurement Based on Bioelectrical Impedance Analysis.....N/A**

Mst Farzana Khatun (Rajshahi University of Engineering & Technology, Bangladesh); Tahasin Ahmed Fahim (Rajshahi University of Engineering & Technology, Bangladesh); Sajib Sen (University of Memphis, USA); Md Sohel Rana (Rajshahi University of Engineering & Technology, Bangladesh)

**BHI-T-33: Mathematical Models for Intracellular Fluid Measurement Based on Bioelectrical Impedance Analysis.....N/A**

Mst Farzana Khatun (Rajshahi University of Engineering & Technology, Bangladesh); Tahasin Ahmed Fahim (Rajshahi University of Engineering & Technology, Bangladesh); Sajib Sen (University of Memphis, USA); Md Sohel Rana (Rajshahi University of Engineering & Technology, Bangladesh)

**BHI-T-34: Studying MCI to AD Conversion Radiomics-Based Survival Indexes by Machine Learning.....N/A**

Jorge Andres Orozco (Tecnologico de Monterrey, Mexico); Jose Tamez-Peña (Tecnológico de Monterrey, Mexico)

**BHI-T-35: Personalised Monitoring and Recommendation Services for At-Risk Individuals Employing Machine-Learning and Decision Support.....N/A**

Konstantinos Perakis (UBITECH, Greece); Sotiris Kousouris (Suite5, Greece); Stamatis Pitsios and Dimitris Miltiadou (UBITECH, Greece); George Bikas (Suite5, Greece)

**BHI-T-36: Feasibility of Early Prediction of Heart Failure in Critically-ill Patients using Tele-ICU Data.....N/A**

Patrick Essay and Vignesh Subbian (University of Arizona, USA); Baran Balkan (The University of Arizona, USA)

**BHI-T-37: E-BAP: A scalable and flexible web-based software system to support self-management for behavior changes.....N/A**

Jannatul Ferdouse Tumpa, Daniel Pinto and Riddhiman Adib (Marquette University, USA); Steven Cole (Renaissance School of Medicine at Stony Brook University, USA); Sheikh Ahamed (Marquette University, USA)

**BHI-T-38: The Quantification of Accelerometer Noise Experienced During Wrist Motion.....N/A**

Surya Sharma and Adam Hoover (Clemson University, USA)

**BHI-T-39: Omega-3 Fatty Acid Treatment to Cortical Neurons after Mechanical Injury and Neuroprotective Characterization with Spatial Light Interference Microscopy.....N/A**

Darnella Cole (The University of West Alabama, USA); Jorge Maldonado and Catherine Best (University of Illinois at Urbana Champaign, USA)

**BHI-T-40: A Reference Architecture for Predicting Resilience Levels of Women with Breast Cancer.....N/A**

Dimitris Fotiadis (Institute of Molecular Biology and Biotechnology, FORTH, Greece); Konstadina Kourou (Institute of Molecular Biology and Biotechnology, FORTH-IMBB, Greece); Haridimos Kondylakis and Lefteris Koumakis (Computational Biomedicine Laboratory, FORTH-ICS, Greece); Georgios C. Manikis (Foundation for Research and Technology, Greece); Kostas Marias (FORTH, Greece); Manolis Tsiknakis (FORTH/ TEI CRETE, Greece); Panagiotis Simos (School of Medicine, University of Crete, Greece); Evangelos Karademas (University of Crete, Greece)

**BHI-T-41: Effect of Nuclear Confinement and Polymer Rigidity on Formation of Chromosome Interactions and Chromosome Territory.....N/A**

Samira Mali, Alan Perez-Rathke and Jie Liang (University of Illinois at Chicago, USA)

**BHI-T-42: Mobile App for Advanced Prediction on Causal Chain of Death.....N/A**

Yuanda Zhu, Ryan Hoffman, Hung Vo and Kyla Qi (Georgia Institute of Technology, USA); May Dongmei Wang (Georgia Tech and Emory Univ, USA)

**BHI-T-43: Knowledge-Guided Data Analytics for Determining Causal Chains of Death.....N/A**

Ying Sha and Hang Wu (Georgia Institute of Technology, USA); May Wang (Georgia Institute of Technology and Emory University, USA)



**BHI-T-44: Tensor-based Brain Network Embedding in a Transdiagnostic Psychiatric Cohort.....N/A**

Paul J Thomas (University of Illinois at Chicago, USA); Bokai Cao (Facebook, Inc, USA); Philip Yu, Alex Leow, K. Luan Phan and Olusola Ajilore (University of Illinois at Chicago, USA)

**BHI-T-45: Convolutional Neural Networks Based Random Projections Method with Application to EEG Prediction Tasks.....N/A**

Kartik Ahuja (University of California Los Angeles, USA); Mai Tran (UCLA, USA)

**BHI-T-46: Development of a Functional Health Index for Older Adults using the Electronic Health Record.....N/A**

Anup Mishra (University of Missouri, Columbia, USA); Marjorie Skubic (University of Missouri, USA); Laurel A Despina (University of Missouri, Columbia, USA); Mihail Popescu, Marilyn Rantz and James Keller (University of Missouri, USA); Kari Lane (University of Missouri, Columbia, USA)

**BHI-T-47: Stochastic Analysis of Nucleation Process of HIV-1 Capsid Protein by Solving Discrete Chemical Master Equation Using ACME.....N/A**

Farid Manuchehrfar and Jie Liang (University of Illinois at Chicago, USA)

**BHI-T-48: Effects of Sizes and Shapes on Wound Healing Through Purse-String Mechanism.....N/A**

Pourya Delafrouz (University of Illinois at Chicago, USA); Jieliang Zhao (Institut National de Recherche en Informatique et en Automatique, France); Wei Tian and Jie Liang (University of Illinois at Chicago, USA)

**BHI-T-49: Transferability of Deep Learning Based Sleep Apnea Detection Models.....N/A**

Tom Van Steenkiste and Dirk Deschrijver (Ghent University - imec, Belgium); Tom Dhaene (Ghent University & imec, Belgium)

**BHI-T-50: Bayesian Optimization of MRI k-Space Trajectories.....N/A**

Tom Van Steenkiste (Ghent University - imec, Belgium); Jan Aelterman (Ghent University-IMEC & imec, Belgium); Hiep Q Luong (Ghent University - imec, Belgium); Dirk Deschrijver (Ghent University - imec, Belgium); Tom Dhaene (Ghent University & imec, Belgium)

**BHI-T-51: Predicting Blood Pressure Response to Sleep Apnea Treatment.....N/A**

Chirag Agarwal (University of Illinois at Chicago, USA); Elan Schonfeld (Glenbrook North High School, USA); Dan Schonfeld (University of Illinois, Chicago, USA); Babak Mokhlesi (University of Chicago, USA); Bharati Prasad (UI Health Sleep Sciences Center, USA)

**BHI-T-52: Estimation of Sleep Stage by Head Motion.....N/A**

Motoki Yoshihi and Shima Okada (Ritsumeikan University, Japan); Masaaki Makikawa (College of Science and Engineering, Ritsumeikan University, Japan); Teruaki Nochino (Osaka University, Japan)

**BHI-T-53: Promoting Patient Engagement Through Personalized Hospital-Stay Summaries.....N/A**

Sabita Acharya, Barbara Di Eugenio, Andrew Boyd, Richard Cameron, Karen Dunn Lopez, Pamela Martyn-Nemeth, Debaleena Chattopadhyay, Pantea Habibi, Carolyn Dickens, Haleh Vatani and Amer Ardati (University of Illinois at Chicago, USA)

**BHI-T-54: Pervasive Sensing of Distress using Wearable Devices for People with Dementia.....N/A**

Joseph Howes, Zhaoyang Wang, Jian Zhan, Hanxiao Zhang and Yingnan Sun (Imperial College London, United Kingdom (Great Britain)); Benny Lo (Imperial College, United Kingdom (Great Britain))

**BHI-T-55: DeepSGUS: Fully convolutional neural network for semantic segmentation of Primary Sjögren's syndrome affected salivary glands from ultrasonography images.....N/A**

Arso Vukicevic (University of Kragujevac, Serbia); Milos Radovic (BioIRC, Serbia); Alen Zabotti (Azienda Ospedaliero Universitaria Santa Maria Della Misericordia di Udine, Italy); Vera Milic (Institute of Rheumatology, School of Medicine University of Belgrade, Serbia); Salvatore De Vita (Udine University, Italy); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-56: Our smeared FE model for electrophysiology coupled with heart muscle mechanics.....N/A**

Milos Kojic (Bioengineering Research and Development Center BioIRC, Serbia); Miljan Milosevic (Bioengineering Research and Development Center BioIRC & Metropolitan University Belgrade, Serbia); Vladimir Simic, Bogdan Milicevic and Vladimir Geroski (Bioengineering Research and Development Center BioIRC, Serbia); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-57: Three-dimensional numerical analysis of atherosclerosis development within carotid artery.....N/A**

Smiljana Djorovic (Bioengineering Research and Development Center (BioIRC), Serbia); Igor Saveljic (Bioengineering Research and Development Center, BioIRC, Serbia); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-58: Numerical Simulation of Implantation of Stent Within Artery with Deformable Wall.....N/A**

Tijana Djukic and Igor Saveljic (Bioengineering Research and Development Center, BioIRC, Serbia); Gualtiero Pelosi and Oberdan Parodi (Institute of Clinical Physiology, National Research Council, Pisa, Italy); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-59: Numerical analysis of two hip implant surfaces.....N/A**

Aleksandra Vulovic (Faculty of Engineering, University of Kragujevac, Serbia); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-60: Development of a Microwave Imaging System with Applications in Medical Imaging and Treatment of Cancer Patients.....440**

Nesreen Alsbou and Joshua Branscum (University of Central Oklahoma, USA); Imad Ali (University of Oklahoma Health Sciences Center, USA)

**BHI-T-61: Bladder Volume Estimation by Electrical Impedance Measurement with Fewer Electrodes Using Linear Regression.....N/A**

Shuhei Noyori, Hiroshi Noguchi, Taketoshi Mori and Hiromi Sanada (The University of Tokyo, Japan)

**BHI-T-62: Preliminary Modeling of the Kinetics of Photoplethysmogram Changes Following Non-Invasive Vagus Nerve Stimulation.....N/A**

Asim H Gazi, Nil Z Gurel and Kristine Scott (Georgia Institute of Technology, USA); Matthew T Wittbrodt (Emory University, USA); Amit J Shah and Viola Vaccarino (Rollins School of Public Health, USA); Douglas Bremner (Emory School of Medicine, USA); Omer T Inan (Georgia Institute of Technology, USA)

**BHI-T-63: Participative app for citizen to assess health risks and increase pollution awareness.....441**

Manuel Ottaviano (Universidad Politecnica de Madrid, Spain); Jose G. Terius-Padron (Universidad Politecnica de Madrid & Life Supporting Technologies, Spain); Sergio Gonzalez-Martinez (Universidad Politecnica de Madrid, Spain); Gloria Cea (Universidad Politécnica de Madrid, Spain); Maria Fernanda Cabrera-Umpierrez and Maria Teresa Arredondo (Life Supporting Technologies; Technical University of Madrid, Spain); Sergio Guillén (Ronda Auguste y Louis Lumiere, Spain)

**BHI-T-64: Development and validation of algorithms for remote motor therapy in Parkinson' disease.....N/A**

Patricia Abril-Jimenez (Universidad Politecnica de Madrid, Spain); Javier Rojo Lacal and Samanta Villanueva Mascato (Universidad Politécnica de Madrid, Spain); Silvia de los Rios (Universidad Politecnica de Madrid, Spain); Maria Fernanda Cabrera-Umpierrez and Maria Teresa Arredondo (Life Supporting Technologies; Technical University of Madrid, Spain); Fabricio Basso (Universidad Nacional de Mar del Plata, Spain)

**BHI-T-65: Validation of a Food Image Classifier Based on the Top 50 Consumed Foods from the What We Eat in America Survey.....N/A**

Jenna Kim (University of Washington, USA); Shuhao Lin (University of Illinois at Chicago, USA); Giannina Ferrara (Institute of Health Metrics and Evaluation, USA); Jenna Hua (Stanford Prevention Research Center & Stanford University, USA); Edmund Seto (University of Washington, USA)

**BHI-T-66: Rapid Detection of Heart Rate Fragmentation and Cardiac Arrhythmias: Cycle-by-cycle analysis using rr, Supervised Machine Learning Model, RR Statistical Analysis, and Novel Insights.....N/A**

Ananya Rajagopalan (Redmond HS, USA); Marcus Vollmer (University Medicine Greifswald, USA)

**BHI-T-67: Topological Characterization of High Dimensional Probability Landscapes and Their Dynamical Changes.....N/A**

Wei Tian (University of Illinois at Chicago, USA); Hubert Wagner and Herbert Edelsbrunner (Institute of Science and Technology Austria, Austria); Jie Liang (University of Illinois at Chicago, USA)

**BHI-T-68: Predicting Personalize Lung Healthiness Risk Scores to Identify Probability of an Asthma Attack.....N/A**

Quan Do, Alexa Doig and Son Tran (New Mexico State University, USA)

**BHI-T-69: Physics-Based Modeling of Arterial Hemodynamics in Humans: Tapered versus Uniform Tube-Load Models.....N/A**

Azin Mousavi and Ali Tivay (University of Maryland, USA); Rama Mukkamala (Michigan State University, USA); Barry Finegan (University of Alberta, Canada); M Sean McMurtry (University of Alberta, USA); Jin-Oh Hahn (University of Maryland, USA)

**BHI-T-70: ALL-ResNet: White Blood Cancer Microscopic Images Classification with Deep Neural Network.....N/A**

Quan Liu and Shuxiang Zhu (Case Western Reserve University, USA); Huan Chen (CWRU, USA); Haotian Jiang, Xiaoye Qian and Ming-Chun Huang (Case Western Reserve University, USA)

**BHI-T-71: Melanoma Image Segmentation via Multiple Random Walker Approach.....N/A**

Golnoush Asaëikheybari (Case Western Reserve University, USA); Justin Green (CWRU, USA); Xiaoye Qian, Haotian Jiang and Ming-Chun Huang (Case Western Reserve University, USA)

**BHI-T-72: Kidney Tomosynthesis with Point-by-point Back Projection.....N/A**

Allison McMinn and Ying Chen (Southern Illinois University Carbondale, USA)

**BHI-T-73: Robust Continuous Heart Rate Estimation Using Neck Photoplethysmography During Physiological Interventions.....N/A**

Karam Choi, HyunSeok Moon, Seung Keun Yoon, Soyoun Lee, Eui Seok Shin, Byung-hoon Ko, Uikun Kwon and Sung Hyun Nam (Samsung Advanced Institute of Technology, Samsung Electronics)

**BHI-T-74: Quantification of Hemodynamic Responses to Diuretic Changes in Patients with Heart Failure using Ballistocardiogram and Electrocardiogram Recordings.....N/A**

Beren Semiz (Georgia Institute of Technology, USA); Mobashir Shandhi (Georgia Tech, USA); Joanna Fan (University of California, San Francisco, USA); Sean Dowling (University of California San Francisco, USA); Liviu Klein (University of California, San Francisco, USA); Omer T Inan (Georgia Institute of Technology, USA)

**BHI-T-75: Smartphone Blood Pressure Monitoring.....N/A**

Anand Chandrasekhar and Keerthana Natarajan (Michigan State University, USA); Chang-Sei Kim (Chonnam National University, Korea); Mohammad Yavarimanesh and Mohammed Naji (Michigan State University, USA); Jin-Oh Hahn (University of Maryland, USA); Rama Mukkamala (Michigan State University, USA)

**BHI-T-76: Conventional Pulse Transit Times as Markers of Blood Pressure.....N/A**

Keerthana Natarajan and Mohammad Yavarimanesh (Michigan State University, USA); Robert Block (University of Rochester, USA); Andrew Carek (Georgia Tech, USA); Junxi Zhu (University of Maryland, USA); Giovanni Schifitto (University of Rochester, USA); Omer T Inan (Georgia Institute of Technology, USA); Jin-Oh Hahn (University of Maryland, USA); Rama Mukkamala (Michigan State University, USA)

**BHI-T-77: Correction to the Bramwell-Hill Equation for Changes in Arterial Cross-Sectional Area.....N/A**

Mohammad Yavarimanesh and Anand Chandrasekhar (Michigan State University, USA); Jin-Oh Hahn (University of Maryland, USA); Rama Mukkamala (Michigan State University, USA)

**BHI-T-78: Theoretical Analysis of the Maximum Slope Algorithm for Oscillometric Blood Pressure Estimation.....N/A**

Anand Chandrasekhar, Mohammad Yavarimanesh and Rama Mukkamala (Michigan State University, USA)

**BHI-T-79: The 10 Most Important Features in Predicting Depression from Content of Retrospectively Harvested Text Messages.....N/A**

Monica L. Tlachac and Elke Rundensteiner (Worcester Polytechnic Institute, USA)

**BHI-T-80: Effect of short-term sling exercise with whole body vibration recovery on heart rate and lactic acid level variability.....N/A**

Hyun Ji Woo (Chonbuk National University, Korea)

**BHI-T-81: Chromosomal Architecture on Oncogenic Loci and Mutations in Non-coding Region.....N/A**

Lin Du, Alan Perez-Rathke and Jie Liang (University of Illinois at Chicago, USA)

**BHI-T-82: Sleep Stage Estimation Using Smart Wear.....N/A**

Hiroataka Matsumoto, Shima Okada and Naruhiro Shiozawa (Ritsumeikan University, Japan); Masaaki Makikawa (College of Science and Engineering, Ritsumeikan University, Japan)

**BHI-T-83: Machine Learning-based Fluid Intake Activity Recognition Using Wearable Sensor.....N/A**

Hsiang-Yun Huang, Chia-Yeh Hsieh and Kai-Chun Liu (National Yang-Ming University, Taiwan); Steen J. Hsu (Ming Hsin University of Science and Technology, Taiwan); Chia-Tai Chan (National Yang-Ming University, Taiwan)

**BHI-T-84: Convolutional Neural Networks for Breast Ultrasound Image Segmentation.....N/A**

Yaobin Liang, Juan Shan, David Benjamin and Rania Almajalid (Pace University, USA)

**BHI-T-85: Bone Segmentation in 3D Knee MRI Images Using U-Net.....N/A**

Tomer Alon and Juan Shan (Pace University, USA); Maolin Zhang (Hopewell Valley Central High School, USA); Joe Delvecchio and Ming Zhang (Wentworth Institute of Technology, USA)

**BHI-T-86: Using Virtual Reality Game Environments to Empathize and Care for Patients Diagnosed with Schizophrenia.....N/A**

Sudhanshu Semwal (University of Colorado, Colorado Springs, USA); Abhishek Chepe and Deborah Pina-Thomas (University of Colorado Colorado Springs, USA)

**BHI-T-87: ESP: Euclidean Spheres Packing Implementation for Volume Data Using Slicer3D.....N/A**

Sudhanshu Semwal (University of Colorado, Colorado Springs, USA); Anod Alhazmi (University of Colorado at Colorado Springs, Colorado, USA)

**BHI-T-88: Comparison of MR Elastography data from the mouse brain using single-frequency algebraic inversion and MDEV inversion.....N/A**

Shreyan Majumdar and Dieter Klatt (University of Illinois at Chicago, USA)

**BHI-T-89: Classifying Impaired Awareness of Hypoglycemia with Convolutional Neural Networks.....N/A**

Maitrey Mehta, Danielle Groat, Yu Kuei Lin, Ramkiran Gouripeddi and Julio Facelli (University of Utah, USA)

**BHI-T-90: Assessment of Hand Movement Efficiency in a Rehabilitation Game.....N/A**

Mengxuan Ma (University of Missouri - Columbia, USA); Teresa Tang (David H. Hickman High School, Columbia, MO, USA); Haiyan Hu and Rachel Proffitt (University of Missouri - Columbia, USA); Marjorie Skubic (University of Missouri, USA)

**BHI-T-91: Classification among AD, MCI, and Healthy Controls Using Relative EEG Powers Selected by Fisher Scores.....N/A**

Yi-Hung Liu (National Taipei University of Technology, Taiwan); Chia Fen Tsai (Taipei Veterans General Hospital, Taiwan); Chien-Te Wu (National Taiwan University, Taiwan); Chun-Hung Huang and Shih-Chun Hsieh (National Taipei University of Technology, Taiwan)

**BHI-T-92: Investigating Effects of Pressure Signal Characteristics on Hemodynamic Measurement Performance.....N/A**

Christopher G Scully and Hossein Mirinejad (US Food and Drug Administration, USA); Sandy Weininger (U.S. Food and Drug Administration & Center for Devices and Radiological Health, USA)

**BHI-T-93: Detection algorithm for human gingival sulcus in cross section images by averaged intensity difference.....N/A**

Naresh Kumar Ravichandran, Hoseong Cho, Jaeyul Lee and Sangyeob Han (Kyungpook National University, Korea); Ruchire Eranga Wijesinghe (Kyungil University, Korea); Pilun Kim, Seung-Yeol Lee and Hee-Young Jung (Kyungpook National University, Korea); Joon Ki Kim (LIGNex1 Co., Ltd., Korea); Mansik Jeon (Kyungpook National University, Korea); Jeehyun Kim (Kyungpook National University, Korea)

**BHI-T-94: Oscillations in the Feedback Gene Regulatory Motifs with Slow Promoter Dynamics.....N/A**

Anna Terebus (UIC, USA); Jie Liang (University of Illinois at Chicago, USA)

**BHI-T-95: Using Electrodermal Activity for Automatic Posture Detection.....N/A**

Alec Steele and Mehrdad Nourani (University of Texas at Dallas, USA); Dennis Sullivan (University of Arkansas for Medical Sciences, USA)

**BHI-T-96: How does gender innovation contribute to the analysis of elderly person's voice?.....N/A**

Jiyeoun Lee (Jungwon University, Korea)

**BHI-T-97: CAVA: A System for Identifying Nystagmus.....N/A**

Jacob Newman (University of East Anglia, United Kingdom (Great Britain)); John Phillips (Norfolk & Norwich University Hospital & University of East Anglia, United Kingdom (Great Britain)); Stephen Cox (University of East Anglia, United Kingdom (Great Britain))

**BHI-T-98: In Situ Assessment of Muscle Contusion Recovery with Ultrasound Image Textures and Quantitative Parameters.....N/A**

Da-Ming Huang, Zih-You Yu and Shyh-Hau Wang (National Cheng Kung University, Taiwan)

**BHI-T-99: Using Autoencoders for Predicting Latent Microbiome Community Shifts Responding to Dietary Changes.....N/A**

Derek Reiman and Yang Dai (University of Illinois at Chicago, USA)

**BHI-T-100: A Public Health Platform for Acquiring Contextual Longitudinal Data on the Affect, Behaviors, and Interactions of Populations.....N/A**

Bilal Khan, Kirk Dombrowski, Gisela Font Sayeras, Alekhya Bellam, Kin Pi and Devan Crawford (University of Nebraska-Lincoln, USA)

**BHI-T-101: Population based screening for assessment of falls and mobility using wearable sensors.....N/A**

Barry R. Greene and Killian McManus (Kinesis Health Technologies, Ireland); Brian Caulfield (University College Dublin, USA)

**BHI-T-102: Multi-scale investigation of relationship between inter-hemispheric cerebral perfusion asymmetry and carotid artery stenosis.....N/A**

Amir A Khan (George Mason University, USA); Jigar Patel (Imaging Service, VA Maryland Health Care System, Baltimore, Md, USA); Matthew Chrencik and Anthony Laila (University of Maryland School of Medicine, Baltimore, Md, USA); Nathaniel Woycke and Siddhartha Sikdar (George Mason University, USA); Brajesh Lal (University of Maryland School of Medicine, Baltimore, Md, USA)

**BHI-T-103: Signal detection in extracellular neural ensemble recordings using higher criticism.....N/A**

Farzad Fathizadeh (Swansea University, United Kingdom (Great Britain)); Ekaterina Mitricheva, Rui Kimura and Nikos Logothetis (Max Planck Institute for Biological Cybernetics, Germany); Hamid R. Noori (Max Planck Institute for Biological Cybernetics & New York University, Germany)

**BHI-T-104: An Infrastructure for a Natural Language-Driven Smartphone Healthcare Monitor and Advisor that uses Wearable Technologies.....N/A**

George Stefanek, Marianne Curia and Janet Garwood (Purdue University Northwest, USA)

**BHI-T-105: HoloTeacher: Teaching CPR with HoloLens Augmented Reality.....N/A**

Agnes Gruenerbl (DFKI, Germany); Hamraz Javaheri (German Research Center for Artificial Intelligence, Germany); Eloise Monger and Mary Gobbi (University of Southampton, United Kingdom (Great Britain)); Paul Lukowicz (DFKI and University of Kaiserslautern, Germany)

**BHI-T-106: 3D modeling of atherosclerosis progression in coronary arteries.....N/A**

Igor Saveljic (Bioengineering Research and Development Center, BioIRC, Serbia); Dalibor Nikolic (Bioengineering Research and Development Center, Serbia); Tijana Djukic (Bioengineering Research and Development Center, BioIRC, Serbia); Gualtiero Pelosi and Oberdan Parodi (Institute of Clinical Physiology, National Research Council, Pisa, Italy); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-107: Parametric optimization of stent design based on FE analysis.....N/A**

Dalibor Nikolic (Bioengineering Research and Development Center, Serbia); Igor Saveljic (Bioengineering Research and Development Center, BioIRC, Serbia); Nenad Filipovic (University of Kragujevac, Serbia)

**BHI-T-108: 1-Norm: A novel image processing technique to investigate the influence of inhomogeneities on the scattering of mechanical waves in soft biological tissues.....N/A**

Harish Palnitkar, Rolf Reiter, Martina Guidetti, Shreyan Majumdar and Ramille Shah (University of Illinois at Chicago, USA); Thomas J Royston (851 South Morgan Street MC 063 & amp; University of Illinois at Chicago, Richard and Loan Hill Departm, USA); Dieter Klatt (University of Illinois at Chicago, USA)

**BHI-T-109: Clinical and Computational Comparison of Auscultatory Percussion for Alternative Detection Method of ACS.....N/A**

Bekah Allen, Jonathan Alcantar, Harish Palnitkar and Robert Molokie (University of Illinois at Chicago, USA); Thomas J Royston (University of Illinois at Chicago)

**BHI-T-110: Signal Classification of Wearable Inertial Motion Sensor Data Using a Convolutional Neural Network.....N/A**

John D Ralston (Protxx, Inc, USA); Andreas Hauenstein and Joshua Roper (PROTXX, Inc., USA); Andreas Ralston (Protxx, Inc, USA)

**BHI-T-111: Predictive modeling for disease management in distributed environments using incremental learning: a case study.....N/A**

Vasileios C. Pezoulas (University of Ioannina, Greece); Themis Exarchos (Institute of Molecular Biology and Biotechnology, FORTH, Greece); Athanasios Tzioufas (National and Kapodistrian University of Athens, Greece); Salvatore De Vita (Udine University, Italy); Dimitris Fotiadis (Institute of Molecular Biology and Biotechnology, FORTH, Greece)

**BHI-T-112: Noninvasive Vagal Nerve Stimulation Effects on Anger Response.....N/A**

Nil Z Gurel (Georgia Institute of Technology, USA); Matthew T Wittbrodt (Emory University, USA); Amit J Shah and Viola Vaccarino (Rollins School of Public Health, USA); Omer T Inan (Georgia Institute of Technology, USA); Douglas Bremner (Emory School of Medicine, USA)

**BHI-T-113: A Deep Neural Network Based Method for Identifying Interaction between Compound and Protein.....N/A**

Fan Hu, Jiaxin Jiang, Jianye Zhang and Peng Yin (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, P.R. China)

**BHI-T-114: A Focused Caregiving Mobile App for Alzheimer's Patients.....N/A**

Nafees Qamar and Ning Lu (Governors State University, USA)

**BHI-T-115: DeLHCA: Deep transfer learning for high-content analysis of the effects of drugs on immune cells.....N/A**

Shaista Hussain and Ankit Das (Institute of High Performance Computing, Singapore); Binh P. Nguyen (Victoria University of Wellington, New Zealand); Mardiana Marzuki (Singapore Immunology Network, Singapore); Shuping Lin and Graham Wright (Skin Research Institute of Singapore, Singapore); Amit Singhal (Singapore Immunology Network, Singapore)

**BHI-T-116: LATE NEWS: Keratoconus Detection Using Smartphone.....N/A**

Behnam Askarian, Kamrul Foysal and Jo Woon Chong (Texas Tech University, USA)

**BHI-T-117: LATE NEWS: A Novel Personalized Method for Eye Fatigue Detection.....N/A**

Ayush Dhananjay Modani, Kamrul Foysal and Jo Woon Chong (Texas Tech University, USA)

**BHI-T-118: LATE NEWS: Performance of Non-Contact Heart Rate Monitoring Methods using Smartphones/Webcam Camera.....N/A**

Monay Shoushan and Kamrul Foysal (Texas Tech University, USA); Bersain Reyes and Aldo Rodriguez (UASLP, San Luis Potosi, Mexico); Kwanghee Jung and Jo Woon Chong (Texas Tech University, USA)

**BHI-T-119: LATE NEWS: A Novel Infrared Camera-based Sedentary Time Monitoring Method.....N/A**

Kamrul Foysal and Jo Woon Chong (Texas Tech University, USA)

**BHI-T-120: LATE NEWS: Deep Transductive Learning for Brain MR Imaging Segmentation.....N/A**

Tiancheng He (Houston Methodist Hospital, USA); Lei Wang (Xidian University, P.R. China); Zhong Xue and Stephen Wong (Houston Methodist Cancer Center, USA)

**BHI-T-121: LATE NEWS: Deep learning to automate analysis of high-content screening images of Epithelial-mesenchymal transition.....N/A**

Yunjie He (Houston Methodist Cancer Center, USA); Lei Huang (Houston Methodist Cancer Center & amp; Houston Methodist Hospital, USA); Xiaoyun Xu and Xin Wang (Houston Methodist Cancer Center, USA); Tiancheng He (Houston Methodist Hospital, USA); Vivek Mittal and DingCheng Gao (Weill Cornell Medicine of Cornell University, USA); Stephen Wong (Houston Methodist Cancer Center, USA)

**BHI-T-122: LATE NEWS: On the Predictability of Ventilator-Associated Events in Pediatrics Using Novel Risk Analytics.....N/A**

Adam R Tomczak, Dimitar Baronov, Kathryn Clark and Conor Holland (Etiometry, USA)

**BHI-T-123: LATE NEWS: An Informatics System for Personal Exposure Feature Extraction for the NIH PRISMS Children's Asthma Program.....N/A**

Edmund Seto, Graeme Carvlin, Jeffrey Shirai and Elena Austin (University of Washington, USA)

**BHI-T-124: LATE NEWS: Co-creation of Virtual Reality Re-Usable Learning objectives for 360° video scenarios for the surgical excision of skin lesion.....N/A**

Kleanthis Neokleous (University of Cyprus, Cyprus); Evangelia Gkoukoudi (University of Cyprus & Medical School, Cyprus); Marios Hatziaros and Eirini Schiza (RISE, Cyprus); Maria Matsangidou (University of Kent, unknown); Marios Avraamides (RISE, Cyprus); Stathis Konstantinidis (University of Nottingham, United Kingdom (Great Britain)); Panagiotis Bamidis (Aristotle University of Thessaloniki, Greece); Constantinos Pattichis (University of Cyprus, Cyprus)

**BHI-T-125: LATE NEWS: Medical Electronic-Textile Sensor Simulation and Signal Classification Modeling.....N/A**

Yu-Jiun Ren, Steve Eggleston and Yexian Qin (LR Technologies, Inc., USA)

**BHI-T-126: LATE NEWS: Identification of Malignant Liver Tissues in PET images Using K-means Clustering Technique Based on Pixel Intensity.....N/A**

Gamal Geweid (University of North Dakota & School of Electrical Engineering and Computer Science, USA)

**BHI-T-127: LATE NEWS: Cardiac Ultrasound Left Ventricular Image Sequence Tracking.....N/A**

Wei-Yen Hsu (National Chung Cheng University, Taiwan)

**BHI-T-128: LATE NEWS: Predicting Vasopressor Interventions in Critically Ill Patients.....N/A**

Joseph Futoma (Harvard University & Duke University, USA); Finale Doshi-Velez (Harvard, USA); Rishikesan Kamaleswaran (University of Tennessee Health Science Center, USA)

## Wednesday, May 22

9:00 - 10:30

### BHI Special Session #5: Decision-Support Computing by Data-Driven and AI-based Approaches for Healthcare

Room: Meeting Room DE

Chair: Sondes Chaabane (Univ-Valenciennes, France)

9:00

#### [F-DIT-V: An Automated Video Classification Tool for Facial Weakness Detection.....442](#)

Yan Zhuang, Omar Uribe, Mark McDonald, Xuwang Yin, Dhyey Parikh, Andrew Southerland and Gustavo Rohde (University of Virginia, USA)

9:15

#### [Extracting Most Impacting Emergency Department Patient Flow By Embedding Laboratory-confirmed and Clinical Diagnosis on The Stiefel Manifold.....446](#)

Guillaume Bouleux (University of Lyon, INSA Lyon, DISP, France); Vincent Cheutet and Clement Pealat (Univ Lyon, INSA-Lyon, DISP, France)

9:30

#### [Machine Learning of Psychological Stress to Relate to Suicidal Ideation.....N/A](#)

Gen-Min Lin (Hualien Armed Forces General Hospital, Taiwan); Chin Lin (National Defense Medical Center, Taiwan)

9:45

#### [Comparing General and Locally-Learned Word Embeddings for Clinical Text Mining.....450](#)

Jidapa Thadajarassiri, Cansu Sen, Thomas Hartvigsen, Xiangnan Kong and Elke Rundensteiner (Worcester Polytechnic Institute, USA)

9:00 - 10:30

### BHI Session #7: Imaging Informatics II

Room: Meeting Room GH

Chairs: Ronald J Nowling (Milwaukee School of Engineering, USA), Said Pertuz (Universidad Industrial de Santander, Colombia)

9:00

#### [Selecting the Mammographic-View for the Parenchymal Analysis Based Breast Cancer Risk Assessment.....454](#)

Oscar Araque and María Mejía-Sandoval (Universidad Industrial de Santander, Colombia); Antti Sassi, Kirsi Holli-Helenius, Anna-Leena Lääperi, Irina Rinta-Kiikka and Otso Arponen (Tampere University Hospital, Finland); Said Pertuz (Universidad Industrial de Santander, Colombia)

9:15

#### [Classification before Segmentation: Improved U-Net Prostate Segmentation.....458](#)

Ronald J Nowling (Milwaukee School of Engineering, USA); John D Bukowy, Sean D MCGarry and Andrew S. Nencka (Medical College of Wisconsin, USA); Oliver Blasko (Milwaukee School of Engineering, USA); Jay Urbain (Milwaukee School of Engineering & Medical College of Wisconsin, USA); Allison Lowman, Alexander Barrington, Anjishnu Banerjee, Kenneth A Iczkowski and Peter S LaViolette (Medical College of Wisconsin, USA)

9:30

#### [Deep Learning for Assessing Image Focus for Automated Cervical Cancer Screening.....462](#)

Peng Guo and Sanjana Singh (National Institutes of Health, USA); Zhiyun Xue (National Library of Medicine, USA); Rodney Long and Sameer Antani (NIH, USA)

9:45

#### [An Accurate and Efficient Instrument for Monitoring Chest Wall Therapy.....466](#)

Nahom Kidane and Mohammad F. Obeid (Old Dominion University, USA); Antarius Daniel, Robert Kelly and Robert Obermeyer (Children's Hospital of The King's Daughters, USA); Frederic McKenzie (Old Dominion University, USA)

10:00

#### [An AI-based Framework for Supporting Large Scale Automated Analysis of Video Capsule Endoscopy.....471](#)

Daniela Giordano, Francesca Murabito, Simone Palazzo, Carmelo Pino and Concetto Spampinato (University of Catania, Italy)

10:15

#### [Speeding Up Resting State Networks Recognition via a Hardware Accelerator.....475](#)

Filippo Carloni (Politecnico di Milano, Italy); Giada Casagrande (Università di Pisa, Italy); Valentina Corbetta (Politecnico di Milano, Italy); Andrea Agostinelli (Imperial College London, United Kingdom (Great Britain)); Emanuele Del Sozzo and Luca Cerina (Politecnico di Milano, Italy); Marco D Santambrogio (Politecnico di Milano & MIT, Italy)

**13:30 - 15:00**

**BHI Special Session #6: Medical Imaging Informatics - Advances and Trends**

**Room:** Meeting Room DE

**Chairs:** Andreas S. Panayides (University of Cyprus, Cyprus & University of New Mexico, USA), Joel Saltz (Stony Brook University, USA)

13:30

**Current Challenges in Medical Imaging Informatics.....N/A**

Costantinos S. Pattichis (University of Cyprus, Cyprus); Andreas S. Panayides (University of Cyprus, Cyprus & University of New Mexico, USA); Amir Amini (University of Louisville, USA); Nenad Filipovic (University of Kragujevac, Serbia); Ashish Sharma (Emory University, USA); Sotirios Tsaftaris (University of Edinburgh, United Kingdom (Great Britain)); Alistair Young (University of Auckland, Cyprus); David J Foran (Rutgers Cancer Institute of New Jersey, USA); Spyretta Golemati (National Kapodistrian University of Athens, Greece); Tahsin Kurc (Stony Brook University, USA); Andrew Laine (Columbia University, USA); Konstantina Nikita (National Technical University of Athens, Greece); Michalis Zervakis (Technical University of Crete, Greece); Joel Saltz (Stony Brook University, USA)

13:45

**Pathomic Data and its Significance Beyond a Pathology Report.....N/A**

Joel Saltz (Stony Brook University, USA); Eric B. Durbin (University of Kentucky, USA); Tahsin Kurc (Stony Brook University, USA); David J Foran (195 Little Albany Street & Rutgers Cancer Institute of New Jersey, USA); Ashish Sharma (Emory University, USA); Dimitris Samaras (Stony Brook University, USA)

14:00

**Computational Pathology and Integrative Genomics for Cancer Precision Medicine.....N/A**

Kun Huang (Indiana University School of Medicine & Regenstrief Institute, USA)

14:15

**Exascale Deep Learning for Medical Image Analysis.....N/A**

Georgia Tourassi (Oak Ridge National Laboratory, USA)

14:30

**Can Structural MRI Radiomics Predict DIPG Histone H3 Mutation and Patient Overall Survival at Diagnosis Time? .....479**

Jessica Goya-Outi (Inserm/CEA/CNRS/Univ Paris-Sud); Raphael Calmon (APHP, Necker Hospital, France); Fanny Orlhac (INRIA, France); Cathy Philippe (CEA, France); Nathalie Boddaert and Stéphanie Puget (APHP, Necker Hospital, France); Irène Buvat (Inserm/CEA/CNRS/Univ Paris-Sud); Vincent Frouin (CEA, France); Jacques Grill (Gustave-Roussy/CNRS, France); Frédérique Frouin (Inserm/CEA/CNRS/Univ Paris-Sud)

**13:30 - 15:00**

**BHI Session #8: Behavioral & Sensor Informatics**

**Room:** Meeting Room GH

**Chairs:** Karam Choi (Samsung Advanced Institute of Technology, Samsung Electronics, South Korea, Korea), Soyoung Lee (Samsung Advanced Institute of Technology, Korea), Sung Hyun Nam (Samsung Advanced Institute of Technology, Korea), Terumi Umematsu (Massachusetts Institute of Technology, USA & NEC Corporation, Japan)

13:30

**Automatic Subtask Segmentation Approach of the Timed Up and Go Test for Mobility Assessment System Using Wearable Sensors.....483**

Chia-Yeh Hsieh, Hsiang-Yun Huang and Kai-Chun Liu (National Yang-Ming University, Taiwan); Kun-Hui Chen (Taichung Veterans General Hospital, Taiwan); Steen J. Hsu (Ming Hsin University of Science and Technology, Taiwan); Chia-Tai Chan (National Yang-Ming University, Taiwan)

13:45

**A Deep Learning Assisted Method for Measuring Uncertainty in Activity Recognition with Wearable Sensors.....487**

Ali Akbari and Roozbeh Jafari (Texas A&M University, USA)

14:00

**Personalized Wellbeing Prediction using Behavioral, Physiological and Weather Data.....492**

Han Yu (Rice University, USA); Elizabeth Klerman (Harvard Medical School, Brigham and Women's Hospital, USA); Rosalind Picard (MIT Media Lab, USA); Akane Sano (Rice University, USA)

14:15

**Improving Students' Daily Life Stress Forecasting using LSTM Neural Networks.....496**

Terumi Umematsu (Massachusetts Institute of Technology, USA & NEC Corporation, Japan); Akane Sano (Rice University, USA); Sara Taylor and Rosalind Picard (MIT Media Lab, USA)



14:30

**Non-Invasive In-Home Sleep Stage Classification Using A Ballistocardiography Bed Sensor.....500**

Ruhan Yi and Moein Enayati (University of Missouri, Columbia, USA); James Keller, Mihail Popescu and Marjorie Skubic (University of Missouri, USA)

14:45

**Peak Detection Algorithm for Gait Segmentation in Long-Term Monitoring for Stride Time Estimation using Inertial Measurement Sensors.....504**

Markus Johannes Lueken (RWTH Aachen University, Germany); Steffen Leonhardt (RWTH Aachen, Germany); Chuong Ngo (RWTH Aachen University & Helmholtz-Institute for Biomedical Engineering, Germany); João Pedro Batista, Jr and Cornelius Bollheimer (RWTH Aachen University Hospital, Germany); Warner ten Kate (Philips Research, The Netherlands)

**15:15 - 16:45**

**BHI Special Session #7: Internet of Things and Machine Learning for Health Informatics**

**Room:** Meeting Room DE

**Chairs:** Nitesh Chawla (University of Notre Dame, USA), Keith Feldman (University of Notre Dame, USA), Teja Kuruganti (Oak Ridge National Laboratory, USA), Ozgur Ozmen (Oak Ridge National Laboratory, USA), Laura Pullum (Oak Ridge National Laboratory, USA)

15:15

**Wearable Body Sensor Network.....N/A**

Lei Wang (Chinese Academy of Sciences, P.R. China)

15:30

**Data driven connected care solutions for home disease management.....N/A**

Bin Yin (Philips Research China & Fudan University, P.R. China)

15:45

**Measuring eating behavior in patients with arm impairment after stroke using a smart plate.....N/A**

Gert Mertes (University of Oxford, United Kingdom (Great Britain) & KU Leuven, Belgium); Li Ding and Wei Chen (Fudan University, P.R. China); Hans Hallez (KU Leuven, Belgium); Jie Jia (Fudan University, P.R. China); Bart Vanrumste (KU Leuven, Belgium)

16:00

**Obstructive Sleep Apnea Classification in a Mixed-Disorder Elderly Male Population Using a Low-Cost Off-Body Movement Sensor.....508**

Pradyumna Byappanahalli Suresha and Ayse S Cakmak (Georgia Institute of Technology, USA); Giulia Da Poian (Emory University, USA); Amit J Shah (Rollins School of Public Health, USA); Viola Vaccarino, Donald Bliwise and Gari D Clifford (Emory University, USA)

16:15

**Machine Learning Approaches on Gait Biometrics for Securing BSN-based Healthcare Systems.....N/A**

Yingnan Sun (Imperial College London, United Kingdom (Great Britain)); Po Wen Lo (Imperial College London & ICL, United Kingdom (Great Britain)); Benny Lo (Imperial College, United Kingdom (Great Britain))

16:30

**Printed flexible and stretchable hybrid electronic systems for wearable applications.....N/A**

Wei Yuan (Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, P.R. China)

**15:15 - 16:45**

**BHI Session #9: Clinical & Public Health Informatics**

**Room:** Meeting Room GH

**Chairs:** Wei Chen (Fudan University, P.R. China), Benny Lo (Imperial College, United Kingdom (Great Britain))

15:15

**Predicting Cognitive Impairment Level after a Serious Game-based Therapy in Chronic Stroke Survivors.....512**

Hee-Tae Jung (University of Massachusetts Amherst, USA); Hyunsuk Lee (Woorisoft, Korea); Kwangwook Kim (Daegu University, Korea); Byeongil Kim (Woorisoft, Korea); Sungji Park, Taekyeong Ryu and Yangsoo Kim (Heeyeon Rehabilitation Hospital, Korea); Jean-Francois Daneault (Rutgers University, USA); Sunghoon Ivan Lee (University of Massachusetts, USA)

15:30

**Topic modeling to discern irregular order patterns in unlabeled EHRs.....516**

Ozgur Ozmen, Hilda Klasky, Olufemi Omitaomu, Mohammed M. Olama, Teja Kuruganti and Laura Pullum (Oak Ridge National Laboratory, USA); Merry Ward, Jean Scott, Angela Laurio and Jonathan Nebeker (Veterans Administration, USA)

15:45

**Unpacking Prevalence and Dichotomy in qSOFA Parameters: A Step towards Multi-parameter Intelligent Sepsis Prediction in ICU.....520**

Nazmus Sakib (Marquette University); Devansh Saxena and Lin He (Marquette University, USA); Paul Griffin (Purdue University, USA); Sheikh Ahamed (Marquette University, USA); Munirul Haque (Purdue University, USA)

16:00

**You're Making Me Depressed: Leveraging Texts from Contact Subsets to Predict Depression.....524**

Monica L. Tlachac, Ermal Toto and Elke Rundensteiner (Worcester Polytechnic Institute, USA)

16:15

**Estimating Personal Resting Heart Rate from Wearable Biosensor Data.....528**

Chentian Jiang (Duke University, USA); Lida Farooqi and Latha Palaniappan (Stanford University, USA); Jessilyn Dunn (Duke University, USA)

16:30

**Outside the Hospital Walls: Associations of Value Based Care Metrics and Community Health Factors.....532**

Catherine Markley, Keith Feldman and Nitesh Chawla (University of Notre Dame, USA)