# BIBE2020-ADVANCED PROGRAM

## PROGRAM AT GLANCE

### MONDAY, Oct. 26, 2020

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<th>BIOINFORMATICS</th>
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<td>BIO1: Gene-Proteins -1</td>
<td>BM1: HealthCare</td>
<td>BM2: Bio-Med Imaging-1</td>
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### TUESDAY, Oct. 27, 2020

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<td>BIO4: Molecules-Cells</td>
<td>BM7: EEG-Neuro-2</td>
<td>BM8: Bio-Med Imaging-2</td>
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<td>BIO5: Drugs/Diseases</td>
<td>BM9: Biomed Imaging-3</td>
<td>BM10: ECG-Cario-1</td>
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<td>BIO6: Biomarkers</td>
<td>BM11: Rehab/Devices-1</td>
<td>BM12: Cancer-1</td>
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### WEDNESDAY, Oct. 28, 2020

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<td>BM16: Cancer-2</td>
<td>BM17: Rehab/Devices-3</td>
<td>BM18: CT-MRI-1</td>
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<td>POSTERS</td>
<td>BM19: Rehab/Devices-4</td>
<td>BM20: CT-MRI-2</td>
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MAIN PROGRAM

DAY-1: MONDAY, Oct. 26, 2020

08:30-09:00
OPENING WELCOME

PARALLEL SESSIONS

09:00-11:20
BIOINFORMATICS-1

**BIO1: Gene-Proteins-1**

SESSION CHAIRS: M. Raymer

(1.) Bayesian protein superposition using Hamiltonian Monte Carlo Lys Sanz Moreta, Ahmad Salim Al-Sibahi and Thomas Hamelryck


(63) Cancer Classification Analysis for Microarray Gene Expression Data by Integrating Wavelet Transform and Visual Analysis, Soo Yeon Ji and Dong Hyun Jeong

(80) Comprehensive Study of Keywords for Sequence-Based Automatic Annotation of Protein Functions, Yu-Cheng Li, Mao-Jan Lin, Xiao-Xuan Huang, Chien-Yu Chen and Yi-Chang Lu

(105) Prediction of protein – peptide binding residues using classification algorithms, Shima Shafiee, Abdolhossein Fathi and Fardin Abdali Mohammadi

(108) Survival prediction and risk estimation of Glioma patients using mRNA expressions, Navodini Wijethilake, Dulani Meedeniya, Charith Chitraranjan and Indika Perera
### BM1: Health Care

**SESSION CHAIRS: A. Britzolaki**

- (5) The impact of maternal vasodilatation as pregnancy progress on peripheral arterial tonometry in assessment of endothelial function. **Shuai Tang, Shan Meng, Zihong Wang, Xiaomin Luo and An Zhao**


- (135) Cluster-Boosted Multi-Task Learning Framework for Survival Analysis. **Lu Wang, Mark Chignell, Haoyan Jiang and Nipon Charoenkitkarn**

- (159) An Embedding-based Medical Note De-identification Approach with Minimal Annotation. **Hanyue Zhou and Dan Ruan**

- (253) Automated Emotional Valence Prediction in Mental Health Text via Deep Transfer Learning. **Benjamin Shickel, Martin Heesacker, Sherry Benton and Parisa Rashidi**

- (254) Automatic Detection and Classification of Cognitive Distortions in Mental Health Text. **Benjamin Shickel, Scott Siegel, Martin Heesacker, Sherry Benton and Parisa Rashidi**

- (256) On Using Composite Word Embeddings To Improve Biomedical Term Similarity. **Abhishek Singh, Wei Jin**

### BM2: BioMed Imaging

**SESSION CHAIRS: K. Nikita**

- (19) Improved Automatic Bone Segmentation Using Large-Scale Simulated Ultrasound Data to Segment Real Ultrasound Bone Surface Data. **Hridayi Patel and Ilker Hacihaliloglu**

- (21) Hand-drawn Symbol Recognition of Surgical Flowsheet Graphs with Deep Image Segmentation. **William Adorno, Angela Yi, Marcel Durieux and Donald Brown**

- (34) Contour detection in synthetic bi-planar X-ray images of the scapula: Towards improved 3D reconstruction using deep learning. **Catherine Namayega, Bessie Malila, Tania Douglas and Tinashe Mutsvangwa**

- (35) Deep Multiview Learning for Population Subtyping with Multimodal Imaging. **Yixue Wendy Feng, Mansu Kim, Xiaohui Yao, Kefei Liu, Qi Long and Li Shen**

- (36) Estimating Hard-tissue Conditions from Dental Images via Machine Learning. **Jingxuan Bao, Mansu Kim, Qing Sun, Anderson Hara, Gerardo Maupome and Li Shen**

- (67) Learning Local Feature Descriptions in 3D Ultrasound. **Daniel Wulff, Jannis Hagenah, Svenja Ipsen and Floris Ernst**

- (79) Visualization for Histopathology Images using Graph Convolutional Neural Networks. **Mookund Sureka, Abhijeet Patil, Deepak Anand and Amit Sethi**
13:00-15:20 BIOINFORMATICS-2

**BIO2: Gene-Proteins-2**

**SESSION CHAIRS: P. Pavlidis**

(121) Study on the miRNA-mediated regulatory network in the heart adjacent tissues of patients with tetralogy of Fallot - Guangbin Wang, Nini Rao, Changlong Dong, Felix Biwott K, Wei Zeng and Fenglin Gao

(128) Shape tracing: An extension of sphere tracing for 3D non-convex collision in protein docking - Adam Leach, Lucas S.P. Rudden, Sam Bond-Taylor, John C. Brigham, Matteo T. Degiacomi and Chris G. Willcocks

(138) Better Link Prediction for Protein-Protein Interaction Networks - Ho Yin Yuen and Jesper Jansson

(162) Identification of Kidney Clear Cell Carcinoma Mortality Risk-Associated Gene Mutation by Using a Random Survival Forest Approach - Cheng-Hong Yang, Yin-Suun Chen, Sin-Hua Moi, Li-Yeh Chuang and Yu-Da Lin

(182) qLD: High-performance Computation of Linkage Disequilibrium on CPU and GPU - Charalampos Theodoris, Nikolaos Alachiotis, Tze Meng Low and Pavlos Pavlidis

(191) Global fitting and parameter identifiability for amyloid-β aggregation models with competing pathways - Pratip Rana, Priyankar Bose, Ashwin Vaidya, Vijay Rangachari and Preetam Ghosh

13:00-15:20 BIOMEDICAL & BIOENGINEERING -3

**BM3: Biomed Models**

**SESSION CHAIRS: N. Tsekos**

(95) Multi-class classification and feature analysis of FTM drawing tasks in a digital assessment of tremor - Kazi Sabrina Sonnet, Benjamin Ferleger, Andrew Ko, Howard Chizeck and Jeffrey Herron

(106) Efficient Modeling of Plant Short and Long Term Behavioral Responses to a Stimuli - Gaddi Blumrosen, Yonatan Weksler, Doron Shkolnik and Alex Golberg

(173) Theory of Virus Public Infection Through The Weiss Approach - Huber Nieto-Chaupis


(189) Fuzzy Clustering with eps-Hyperballs Based Simplification of Fuzzy Rules to Support the Assessment of Fetal State - R. Czabanski, M. Jezewski, Jacek Leski, Tomasz Kupka, R. Martinek

(219) Maintaining High Accuracy General P300 Speller Using the Language Modeling and Dynamic Stopping - James Soetedjo, Osita Sean Keluo-Udeke, Corey Arnold, Nader Pouratian and William Speier

(231) Reasoning on Stochastic Models in Systems Biology Under Uncertainty - Krishnendu Ghosh
### 13:00-15:20

**BM4: EEG and Neuro-1**

**SESSION CHAIRS: D. Soudris**

(14) Detection and classification of tongue movements from single-trial EEG  
Rasmus Leck Kæseler, Lotte N. S. Andreasen Struijk and Mads Jochumsen

(18) Personalized Feature Selection for Wearable EEG Monitoring Platform  
Genchang Peng, Mehrdad Nourani, Jay Harvey and Hina Dave

(51). Computing Phase Amplitude Coupling in EEGLAB: PACTools  
Ramon Martinez-Cancino, Arnaud Delorme, Kenneth Kreutz-Delgado and Scott Makeig

(69) A novel simulator for extended Hodgkin-Huxley neural networks  
Sotirios Panagiotou, Rene Miedema, Harry Sidiropoulos, Georgios Smaragdos, Christos Strydis and Dimitrios Soudris

(70) Investigating the feasibility of combining EEG and EMG for controlling a hybrid human computer interface in patients with spinal cord injury  
Kasper Leerskov, Muhammad Rehman, Imran Niazi, Sylvain Cremoux and Mads Jochumsen

(91) Aerosol Particle Deposition in the Lungs: Effect of Breathing Patterns  
Marika Pilou

(157) Time-varying Graphs: A Method to Identify Abnormal Integration and Disconnection in Functional Brain Connectivity with Application to Schizophrenia  

### 15:40-17:00

**BIO3: Proteins-Gene-Sequences**

**SESSION CHAIRS: Henry van den Bedem**

(56) Interpretable Factors in scRNA-seq Data with Disentangled Generative Models-  
Haiyi Mao, Matthew Broerman and Panayiotis Benos

(127) Efficient Search of Circular Repeats and MicroDNA Reintegration in DNA Sequences-  
Yiming Wang, Hao Lou, Pankaj Kumar, Anindya Dutta and Farzad Farnoud

(199) Exploring Modern FPGA Platforms for Faster Phylogeny Reconstruction with RAxML-  
Pavlos Malakonakis, Andreas Brokalakis, Nikolaos Alachiotis, Euripides Sotiriades, Apostolos Dollas

(213) More Results on Experimental Evaluations of Some Algorithms for Block Sorting  
Asai Asaithambi, Swapnoneel Roy, Sandhya Turlapaty

(216) Chemical Induced Differential Gene Expression Prediction on LINCS Database-  
Rıza Işık, Işıksu Ekşioglu, Bahattin Can Maral, Benan Barak and Mehmet Tan

(232) Chaos Game Representations & Deep Learning for Proteome-Wide Protein Prediction  
Kevin Dick and James R. Green

(236) Sequence-guided protein structure determination using graph convolutional and recurrent networks-  
Po-Nan Li, Saulo H. P. de Oliveira, Soichi Wakatsuki and Henry van den Bedem
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<th>15:40-17:00</th>
<th>BIOMEDICAL &amp; BIOENGINEERING-5</th>
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<tr>
<td><strong>BM5: COVID-19</strong></td>
<td><strong>SESSION CHAIRS: N. Bourbakis</strong></td>
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<tr>
<td>(61) COVID-19 diagnosis in CT images using CNN to extract features and multiple classifiers- Edelson Damasceno Carvalho, Edson Damasceno Carvalho and Antônio Oséas de Carvalho Filho</td>
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<td>(84) An outbreak response tool to effectively support surveillance of suspect, probable and confirmed incidence cases while staying safe in COVID-19 - D. Katehakis, G. Kaventakis, N. Stathiakis, F. Logothetidis, A. Kouroubali, H. Kondylakis, Y. Petrakis, V. Tzikoulis and S. Kostomanolakis</td>
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<td>(103) Heatmap Template Generation for COVID-19 Biomarker Detection in Chest X-Rays- Mirtha Lucas, Miguel Lerma, Jacob Furst and Daniela Raicu</td>
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<td>(194) Dynamical modeling, calibration and robustness analysis of COVID-19 using Italian data- Chiara Antonini, Sara Calandrini, Fabrizio Stracci, Claudio Dario and Fortunato Bianconi</td>
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<td>(206) Predicting the Immune Response to Repurposed Drugs in Coronavirus-induced Cytokine Storm - Matthew Morris, Cole Lyman, Spencer Richman, Hong Bao Cao, Chris Cheadle and Gordon Broderick</td>
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<td>(239) OMAD: On-device Mental Anomaly Detection for Substance and Non-Substance Users During COVID-19- Emon Dey and Nirmalya Roy</td>
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<th>15:40-17:00</th>
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<td><strong>BM6: Bio-Sensing</strong></td>
<td><strong>SESSION CHAIRS: N. Filipovic</strong></td>
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<td>(41) Fusion Learning on Multiple-Tag RFID Measurements for Respiratory Rate Monitoring- Stephen Hansen, Daniel Schwartz, Jesse Stover, Md Abu Saleh Tajin, William Mongan and Kapil Dandekar</td>
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<td>(48) Frequency Response of a Novel IR Based Pressure Sensitive Mat for Well-being Assessment- Bruce Wallace, Julien Lorivière-Chartier, Haoyang Liu, Tom Sloan, Rafik Goubran and Frank Knoefel</td>
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<td>(49) Evaluation of the Pressure Applied to a Patients Skin During Patient Transfer Steven Cramp and Bruce Wallace</td>
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<td>(92) Using Wavelet-based Fractal Analysis of Inertial Measurement Unit Signals to Examine Gait Data from Men and Women during a Load Carriage Task Nizam Ahamed, Kellen Krajewski, Camille Johnson, Adam Sterczala, Julie Greeves, Sophie Wardle, Thomas O'Leary, Qi Mi, Shawn Flanagan, Bradley Nindl and Chris Connaboy</td>
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<td>(124) Is Dielectrophoretic Movement through Micro Channel with Asymmetric Surface Electrodes Fabricated by Photolithography Technique Effective to Sort Flowing Cell? Shigehiro Hashimoto and Kiyoshi Yoshinaka</td>
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<td>(133) Microwave-based Nondestructive Sensing Approach for Blood Types Identification Ala Eldin Omer, George Shaker, Richard Hughson and Safieddin Safavi-Naeini</td>
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<td>(154) Stress Level Detection Using Physiological Sensors Özge Günaydın and Reis Burak Arslan</td>
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| 17:00 | **End-DAY-1** |
DAY-2: TUESDAY, Oct. 27, 2020

Parallel Sessions

BIOINFORMATICS-4

09:00-11:20

BIO4: Molecules-Cells
SESSION CHAIRS: H-N Chaupis

(76) In vitro evaluation of red blood cell flow in bifurcating microchannel Yohei Miyoshi, Hiroki Abe and Toru Hyakutake

(94) Deep learning-assisted pipeline for Virtual Screening of ligand compound databases: Application on inhibiting the entry of SARS-CoV-2 into human cells Stelios Mylonas, Apostolos Axenopoulos, Sotiris Katsamakas, Ioannis Gkekas, Kostas Stamatopoulos, Spyros Petrakis and Petros Daras

(148) Trend Training Based Prediction for Human iPSC Cell Reprogramming by Adaptive-RNN Using Time-Lapse Microscopy Images -Slo-Li Chu, Kuniya Abe, Hideo Yokota, Kazuhiro Sudo, Yukio Nakamura, Shao-Yu Sung and Ming-Dar Tsai

(166) Ions Diffusion and Electrodynamics Interactions Inside Pancreatic Beta Cells, Huber Nieto-Chaupis

(170) Migration Velocity of Cell under Shear Flow Field: After and Before Division, Shigeihiro Hashimoto and Kiyoshi Yoshinaka

(174) Configurational differences and binding mechanisms of interleukin-1 receptor-associated kinase 1 - Yun-Ti Chen, Cheng-Hsuan Wu, Yi-Cyun Chen, Yen-Chao Hsu, Yu-Wei Huang and Jinn-Moon Yang

BM7: EEG-Neuro-2
SESSION CHAIRS: M. Alamaniotis

09:00-11:20

(114) Human Chemosignals Modulate Interactions Between Social and Emotional Brain Areas, Saideh Ferdowsi, Dimitri Ognibene, Tom Foulisham, Vahid Abolghasemi, Wen Li and Luca Citi

(169) A Novel Regression-based Algorithm for the recognition of SSVEP responses - Vangelis Oikonomou, Spiros Nikolopoulos and Ioannis Kompatsiaris

(175) A Study on the Effect of Distinct Adjacency Matrices for Graph Signal Denoising - Anastasia Pentari, George Tsagkarakis, Kostas Marias and Panagiotis Tsakalides

(179) Analysis of Correlation in Neural Responses across Multiple Subjects or Trials during Decision-making for Newsvendor Problem - Nghi Truong, Hashini Wanniarachchi, Yan Lang, Xinlong Wang, Sridhar Nerur, Kay-Yut Chen and Hanli Liu

(185) Unsupervised EEG Cybersickness Prediction with Deep Embedded Self Organizing Map, Yonggun Lee and Miltiadis Alamaniotis

(227) EEG noise model in cortical source localization of ICA-derived source scalp projection maps, Zeynep Akalin Acar and Scott Makeig

(229) Improve Seizure Detection using Meta Transfer Learning on EEG Signals Yuanda Zhu, Mohammed Saqib, Elizabeth Ham, Sami Belhareth, Ryan Hoffman and May Wang
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<th>Time</th>
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<td>09:00-11:20</td>
<td>BM8: BioMed Imaging-2</td>
<td>(96) Deformable Image Registration with a Scale-adaptive Convolutional Neural Network - Yudi Sang and Dan Ruan</td>
<td>D. E. Brown</td>
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<td>(100) Semi-Supervised Detection on Noisy, Gigapixel Histology Images - Joseph Vincent Pulido, Shan Guleria, Lubaina Eshan, Matthew Fasullo, Robert Lippman, Pritesh Mutha, Tilak Shah, Sana Syed and Donald E. Brown</td>
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<td>(102) Video-rate acquisition fluorescence microscopy via generative adversarial networks - Tahir Bachar Issa, Claudio Vinegoni, Andrew Shaw, Paolo Fumone Feruglio, Ralph Weissleder and David Uminsky</td>
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<td>(107) Exploiting the Transferability of Deep Learning Systems Across Multi-modal Retinal Scans for Extracting Retinopathy Lesions - Taimur Hassan, Muhammad Usman Akram and Naoufel Werghi</td>
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<td>(111) Segmentation of Macular Edema Datasets with Small Residual 3D U-Net Architectures –Jonathan Frawley, Chris G. Willcocks, Maged Habib, Caspar Geenen, David H. Steel and Boguslaw Obara</td>
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<td>(115) Criteria for event-related (de)synchronization detection and feature consistency for motor imagery-based neuromodulation - Carlos Alberto Stefano Filho, José Ignacio Serrano, Romis Attux, Gabriela Castellano, Eduardo Rocon and Maria Dolores del Castillo</td>
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<td>(116) Image Processing of 3D Scans for Upper Limb Prosthesis of the War-Wounded - Aya Gaballa and John-John Cabibihan, Laurent, and Diab</td>
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<td>11:20-13:00</td>
<td><strong>BREAK</strong></td>
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<td>13:00-15:20</td>
<td>BIO5: Drugs/Diseases</td>
<td>(158) Exploring a Siamese Neural Network Architecture for One-Shot Drug Discovery, Luis Torres, Nelson Monteiro, José Oliveira, Joel Arrais and Bernardete Ribeiro</td>
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<td>(160) New Evaluation Measures for Multifactor Dimensionality Reduction in SNP–SNP Interaction Analysis, Cheng-Hong Yang, Sin-Hua Moi, Li-Yeh Chuang and Yu-Da Lin</td>
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<td>(163) Quantum Mechanics of Targeted Drug Delivery, Huber Nieto-Chaupis</td>
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<td>(172) A Semiclassical Approach of the Keller-Segel Equation, Huber Nieto-Chaupis</td>
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<td>(180) FooDisNET: a database of food-compound-protein-disease associations, Lin Chu Yun, Lee Jung-Yu, Huang Sing-Han, Hsu Yen-Chao, Hsu Nung-Yu and Yang Jinn-Moon</td>
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<td>(248) Task Balanced Multimodal Feature Selection to Predict the Progression of Alzheimer’s Disease, Lodewijk Brand, Braedon O’Callaghan, Anthony Sun and Hua Wang</td>
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BM9: Biomed Imaging-3
SESSION CHAIRS: T. Douglas Mast

(142) A Thrifty Annotation Generation Approach for Semantic Segmentation of Biofilms - Adithi Deborah Chakravarthy, Parvathi Chundi, Mahadevan Subramaniam, Shankarachary Ragi and Venkata R. Gadhamshetty

(151) Theory of the Optimum Affine Isomorphic Restoration of Deformed Images and the Analysis of Medical Buckling-Deformation - Takuro Kida and Yuichi Kida

(171) CNN Based Cell Reprogramming Stage Classifier for Human iPSC Cell Formation Prediction Using Time-lapse Microscopy Images - Slo-Li Chu, Kuniya Abe, Hideo Yokota, Kazuhiro Sudo, Yukio Nakamura, Li-Yu Lin and Ming-Dar Tsai


(188) Bioimaging of muscle myoblast cells using carbon quantum dots - Kirthiga Anpalagan, Jimsheena Karakkat, Daniel Lai, Kulmira Nurgali, Vasso Apostolopoulos, Adam Truskewycz and Ivan Cole

(210) Shear wave elastography in ex vivo and in vivo skin using high-frequency ultrasound imaging - E. G. Sunethra Dayavansha, Sheryl Koch, Jack Rubinstein and T. Douglas Mast

(212) Fully Automated End-to-End Neuroimaging Workflow for Mental Health Screening - Nikita Thomas, Akhila Perumalla, Srinivasa Rao, Venkatesan Thangaraj, Keerthi Sravan Ravi, Sairam Geethanath, Hansuk Kim and Girish Srinivasan

BM10: ECG-Cardio-1
SESSION CHAIRS: M. Zervakis

(7) Stability of the Frequency Spectrum of the Heart Sounds S1 and S2 under Different Physiological Conditions, Samuel Zeising, Angelika Thalmayer, Georg Fischer and Jens Kirchner

(9) Predicting the Change in State of the Human Heart Based on Synthetic Heart Chamber Volume Data, Garrett Goodman and Nikolaos Bourbakis

(13) Detection and localization of Coronary Arterial Lesion with the Aid of Impedance Cardiology and Artificial Neural Network, Sudipta Ghosh, Bhabalani Prasad Chattopadhyay, Rammohan Roy, Jayanta Mukhopadhyay and Manjunatha Mahadevappa

(25) Improving ECG Classification Interpretability using Saliency Maps, Yola Jones, Fani Deligianni and Jeff Dalton

(29) Selecting Feature Sets and Comparing Classification Methods for Cognitive State Estimation, Kati Pettersson, Jaakko Tervonen, Johanna Närviäinen, Pentti Henttonen, Ilmari Määttänen and Jani Mäntyjärvi

(33) A Deep Learning Method for Intraoperative Age-agnostic and Disease-specific Cardiac Output Monitoring from Arterial Blood Pressure, Hyun-Lim Yang, Hyung-chul Lee, Chul-Woo Jung and Min-Soo Kim

(50) Fully Automated Mitral Inflow Doppler Analysis Using Deep Learning, Mohamed Y. Elwazir, Zeynettin Akkus, Didem Ogunz, Zi Ye and Jae K. Oh

BREAK
15:40-18:00 BIOINFORMATICS-6

**BIO6: Biomarkers**

**SESSION CHAIRS:** I. Georgiou

- (57) Explainable Deep Learning for Biomarker Classification of OCT Images
  Yi Yang, Mirtha Lucas, Jacob Furst, Amani Fawzi and Daniela Raicu

- (71) Revisiting Feature Selection with Data Complexity, Thi Nguyen Dong and Megha Khosla

- (155) An intelligent web-based system for the detection and visualization of biomarkers in Microdeletion and Microduplication Syndromes, Konstantinos Stefanou, Paris Ladas, Prodromos Sakologlou, Christos Bellos, Charilaos Kostoulas, Georgios Stergios, Alexandros Fyraridis, Sofia Markoula and Ioannis Georgiou

- (165) A Network-Guided Reaction-Diffusion Model of AT[N] Biomarkers in Alzheimer’s Disease, Jingwen Zhang, Defu Yang, Wei He, Guorong Wu and Minghan Chen

- (203) Determination of Image-based Biomarkers for the Diagnosis of Hypertrophic Cardiomyopathy, Hypertensive Cardiomyopathy and Amyloidosis From Texture Analysis in Cardiac MRI, Ines Vidal-Sospedra, Silvia Ruiz-Espana, Tania Piñeiro-Vidal, Jose Manuel Santabarbara, Alicia Maceira and David Moratal

- (224) Resistant Fit Normalization for Single-cell RNA-seq Data, Da Kuang and Junhyong Kim

15:40-18:00 BIOMEDICAL & BIOENGINEERING-11

**BM11: Rehab/Devices-1**

**SESSION CHAIRS:** I. Papadakis

- (8) Low Cost System for Fall Detection in the Elderly, Tatiana Pereira Filgueiras, Pedro Bertemes Filho and Caroline Ruella Paiva Torres

- (26) Frailty detection of older adults by monitoring their daily routine, Soumaya Msaad, Yannick Zoetgnande, Joaquim Prud’Homm, Geoffroy Cormier and Guy Carrault

- (39) Electrical Impedance Characterization of Bone Fractures in Presence of an Intramedullary Nail, Yunfeng Li, Jan H. Mikkelsen, Stanislav S. Zhekov, Ole K. Jensen, Markus W. Frost, Søren Kold, Gert F. Pedersen and Ming Shen

- (46) Digit Force Control for Dexterous Manipulation: Effects of Contact Surface Stiffness and Object’s Center of Mass, Jide Ma, Na Wei, Mengjie Liu, Ke Li and Yongmei Hu


- (73) Dynamic homeostatic regulation in energy-efficient time-locked neuromorphic systems, Amir Zjajo

- (77) DeepWave: Non-contact Acoustic Receiver Powered by Deep Learning to Detect Sleep Apnea, Qingxue Zhang and Ryan Boente
BM12: Cancer-1
SESSION CHAIRS: J. Santos

(23) Classification of Benign and Metastatic Lymph Nodes in Lung Cancer with Deep Learning, Tuan Pham, Yuzuru Watanabe and Hiroyuki Suzuki

(31) A Quaternary Classifier for the Clinical Evaluation of Pigmented Skin Lesions, Mutlu Mete, Nikolay Metodiev Sirakov, Lauren Dickson, Jillian Frieder, John Griffin, Gregory Hosler and Alan Menter

(47) Unsupervised Learning of Deep-Learned Features from Breast Cancer Images. Sanghoon Lee, Colton Farley, Simon Shim, Yanjun Zhao, Wookjin Choi and Wook-Sung Yoo

(62) Classification of oesophageal early-stage cancers: deep learning versus traditional learning approaches, Jorge Ferreira, Inês Domingues, Olga Sousa, Inês Lucena Sampaio and João Santos

(104) Predicting Kinase-Substrate Interactions in Medulloblastoma Subtypes
Aparna Krishnan, Kristin Leskoske, Krystine Garcia-Mansfield, Ritin Sharma, Patrick Pirrotte, Jessica Rusert and Robert Wechsler-Reya

END DAY-2

DAY-3: TUESDAY, Oct. 28, 2020
Parallel Sessions

BM13: Biomed-Imaging-4
SESSION CHAIRS: C. Pattichis

(122) Blood Vessel Segmentation from Retinal Images, Yongmin Li

(218) Directed Fine Tuning Using Feature Clustering for Instance Segmentation of Toxoplasmosis Fundus Images, Dilanga Abeyrathna, Mahadevan Subramaniam, Parvathi Chundi, Murat Hasanisoglu, Muhammad Sohail, Quan Nguyen and Yasir Sepah


(221) A new conditional region growing approach for an accurate detection of microcalcifications from mammographic images-Asma Touil, Karim Kalti, Pierre-Henri Conze, Basel Solaiman and Mohamed Ali Mahjoub

(228) Imaging carotid wall mechanical heterogeneity in ultrasound image sequences using Eulerian Video Magnification- Biao Jiang, Hazrat Ali and Christer Grönlund

(260) Validation of the machine learning approach for 3D reconstruction of carotid artery from ultrasound imaging, Tijana Djukic, Branko Arsic, Smiljana Djorovic, Igor Koncar and Nenad Filipovic

(261) A Multi-user Virtual Reality application for visualization and analysis in medical imaging- Elena Prodromou, Stephanos Leandrou, Eirini Schiza, Kleanthis Neoleous, Maria Matsangidou and Constantinos Pattichis
BM14: Rehab/Devices-2
SESSION CHAIRS: E. Kostalia

(85) Remote Health Monitoring System for Bedbound Patients, Mostafa Alizadeh, George Shaker and Safieddin Safavi-Naeini

(87) Optimizing P300 speller performance using language models for character and word prediction, Nithin Parthasarathy, Corey Arnold, Nader Pouratian and William Speier

(88) Impact of Different Stimuli on User Stress During a Virtual Firefighting Training Exercise, David Narciso, Miguel Melo, Susana Rodrigues, João Paulo Silva Cunha and Maximino Bessa

(89) Development of a biocompatible patch antenna for retinal prosthesis: comparison of biocompatible coatings, Orfeas Liapatis and Konstantina S. Nikita

(90) Objective Evaluation of Motor Symptoms in Parkinson’s Disease via a Dual System of LEAP Motion Controllers, Elizaveta Naydanova, Min Jae Kim, Brian Hwang, Kelly Mills, William Anderson and Yousef Salimpour

(113) Vision-Based Autonomous Walking in a Lower-Limb Powered Exoskeleton, Wenkai Bao, Dario Villarreal and J.-C. Chiao

(120) Measuring Arousal and Emotion in Healthcare Employees Using Novel Devices, Emma Fortune, Yaqoub Yusuf and Renaldo Blocker

BM15: ECG-Cardio-2
SESSION CHAIRS: D. Miserlis

(74) Hacking the Immune Response to Infection in Chronic Obstructive Pulmonary Disease, Matthew Morris, Spencer Richman, Cole Lyman, Jun Qu, Manoj Mammen, Sanjay Sethi and Gordon Broderick

(177) Fetal Heart Beat detection based on Empirical Mode Decomposition, Signal Quality Indices and Correlation Analysis, Theodoros Lampros, Konstantinos Kalafatakis, Ioannis Violaris, Nikolaos Giannakeas, Alexandros Tzallas and Markos Tsipouras

(183) A comparative analysis of ECG denoising methods, Christelle Makdessy, Hua Cao, Laurent Peyrodie and Hechmi Toumi

(247) An explainable XGBoost-based approach towards assessing the risk of cardiovascular disease in patients with Type 2 Diabetes Mellitus, Maria Athanasiou, Konstantina Srfrntziri, Konstantia Zarkogianni, Anastasia C. Thanopoulou and Konstantina S. Nikita


(257) A deep-learning classifier for cardiac arrhythmias, Carvalho

11:20-13:00 BREAK
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| BM16 | Cancer-2 | (130) Fusing Low-Level Visual Features and High-Level Semantic Features for Breast Cancer Diagnosis in Digital Mammograms, George Apostolopoulos, Athanasios Koutras, Dionysios Anyfantis, Ioanna Christoyianni and Evangelos Dermatas  
(143) Ensemble Machine Learning for Improved Urinary Toxicity Prediction in Prostate Cancer Radiotherapy: Comparison Between Stacking and Genetic Algorithm-based Weighted Voting, Filippos Filias, Eugenia Mylona, Kostas Beklos, Stephane Supiot, Renaud de Crevoisier and Oscar Acosta  
(153) ANN Classification of Female Breast Tumor Type Prediction Using EIM Parameters, Shahrar Kabir and Mohammad Ahad  
(155) Breast Mass Detection and Classification based on Digital Temporal Subtraction of Mammogram Pairs, Kosmai Loizidou, Galateia Skouroumouni, Christos Nikolau and Costas Pitris  
| BM17 | Rehab/Devices-3 | (125) A pilot study on a novel gesture-based tongue interface, Mostafa Mohammadi, Hendrik Knoche, Bo Bentsen, Michael Gaihede and Lotte Andreasen Struijk  
(129) Clinical grade SpO2 prediction through semi-supervised learning, Gurvan Priem, Coralie Martinez, Quentin Bodinier and Guy Carrault  
(132) Wearable CSRR-based Sensor for Monitoring Glycemic Levels for Diabetics, Ala Eldin Omer, George Shaker and Safieddin Safavi-Naeini  
(134) Smart Shoes for Temporal Identification and Corrections to Assist People with Abnormal Walking Patterns, Johnson Sudharshan, Garrett Goodman and Nikolaos Bourbakis  
(152) A machine learning pipeline for predicting joint space narrowing in knee osteoarthritis patients, Charis Ntakolia, Christos Kokkotis, Serafeim Moustakidis and Dimitris Tsakopoulos  
(204) Motor data analysis of Parkinson’s disease patients, Vasiliki Fiska, Nikolaos Giannakeas, Nikolaos Katertsidis, Alexandros Tzallas, Konstantinos Kalafatakis and Markos G. Tsiouras |
13:00-15:20

**BM18: CT-MRI-1**

**SESSION CHAIRS:** N. Tsekos

(64) Usability studies of a user interface for MR-guided manipulator-assisted prostate interventions, Jose Daniel Velazco-Garcia, Nikhil V. Navkar, Shidin Balakrishnan, Julien Abinahed, Abdulla Al-Ansari, Adham Darweesh, Khalid Al-Rumaihi, Eftychios G. Christoforou, Ernst L. Leiss, Mansour Karkoub, Panagiotis Tsiamyrtzis and Nikolaos V. Tsekos

(65) Visualizing functional network connectivity difference between middle adult and older subjects using an explainable machine-learning method, Mohammad Sadegh Eslampanah Sendi, Ji Ye Chun and Vince D Calhoun

(66) A highly tunable dynamic thoracic model for Electrical Impedance Tomography, Christos Dimas, Konstantinos Asimakopoulos and Paul Sotiriadis

(75) Previous-stage-based ROI Reconstruction Method for Ultra-low-dose CT Angiography, Yufu Zhou, Xinzhen Zhang, Weikang Zhang, Jianqi Sun and Jun Zhao

(99) Myocardial Infarction Segmentation in Late Gadolinium Enhanced MRI Images using Data Augmentation and Chaining Multiple U-Net, Rishabh Sharma, Christoph F. Eick and N. Tsekos

(144) Deep Learning based NAS Score and Fibrosis Stage Prediction from CT and Pathology Data, Ananya Jana, Hui Qu, Puru Rattan, Carlos D. Minacapelli, Vinod Rustgi and Dimitris Metaxas

(145) Parkinson’s Disease Detection Using Ensemble Architecture from MR Images*, Tahjid A. Mostafa and Irene Cheng

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15:20-15:40

**BREAK**

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15:40-18:00

**SPECIAL SESSION**

**POSTERS**

**SESSION CHAIRS:** M. Raymer
### BM19: Rehab/Devices-4

**SESSION CHAIRS:** D. Raicu

1. Automatic Physician Gaze Analysis for Real-Time Feedback System - Tianyi Tan, Enid Montague, Jacob Furst and Daniela Raicu
2. A prototype educational virtual assistant for diabetes management, Magdalini Anastasiadou, Anastasios Alexiadis, Eleftheria Polychronidou, Konstantinos Votis and Dimitrios Tzovaras
4. Human Motion Enhancement Using Nonlinear Kalman Filter Assisted Convolutional Autoencoders, Nate Lannan, Le Zhou, Guoliang Fan and Jerome Hausselle
5. EMG Based Simultaneous Wrist Motion Prediction Using Reinforcement Learning, Noah Gardner, Coskun Tekes, Nate Weinberg, Nick Ray, Julian Duran, Stephen N Housley, David Wu and Chih-Cheng Hung
6. Ultrasound Based Wrist Intent Recognition Method for Robotic-Assisted Stroke Rehabilitation, Sam Epeagba, Coskun Tekes, Boris Jerkovic, Nathan Ellis, Stephen N Housley and David Wu
7. A Hybrid Approach to Human Motion Enhancement under Kinematic and Anthropometric Constraints, Le Zhou, Nate Lannan, Guoliang Fan and Jerome Hausselle

### BM20: CT-MRI-2

**SESSION CHAIRS:** David Moratal

2. Varying Information Complexity in Functional Domain Interactions in Schizophrenia, Ishaan Batta, Anees Abrol, Zening Fu and Vince Calhoun
3. PSPU-Net for Automatic Short Axis Cine MRI Segmentation of Left and Right Ventricles, Manuel Pérez-Pelegrí, José V. Monmeneu, María P. López-Lereu, Silvia Ruiz-España, Irene Del-Canto, Vicente Bodi and David Moratal
4. Comparative Analysis of Tagging and Feature-Tracking Cardiac MRI Techniques for the Evaluation of Cardiac Deformation, Pascual T-Cervera, Irene Del-Canto, Maria P. L-Lereu, Jose V. Monmeneu, Silvia R-España, Jose M. Santabárbara, A. Maceira, V. Bodi and D. Moratal
5. Comprehensive End-to-End Workflow for Visceral Adipose Tissue and Subcutaneous Adipose Tissue quantification: Use Case to improve MRI accessibility, Gautham Nandakumar, Girish Srinivasan, Hansuk Kim and Jaewoo Pi
7. BPARC: A novel Spatio-Temporal (4D) data-driven Brain Parcellation Scheme based on Deep Residual Networks, Benham Kazemivash and Vince D. Calhoun

**AWARDS AND ENDING REMARKS**