The 19th annual IEEE International Conference on Bioinformatics and Bioengineering

IEEE BIBE 2019

PROGRAM AT GLANCE

WORKSHOPS SUNDAY, OCT. 27, 2019
W4: **Personalized Medicine**
W6: **Neuro-Imaging**

MONDAY, Oct. 28, 2019		
BIOINFORMATICS SESSIONS	**BIOMED/BIOENG SESSIONS**	**BIOMED/BIOENG SESSIONS**
B1: **Proteins**	BM1: **Health Records-1**	BM2: **Bio-Med Imaging-1**
B2: **Molecules**	BM3: **Biomed Models-1**	BM4: **EEG and ECG**
B3: **Cells**	BM5-W1: **Cancer Care**	BM6: **Sensors-Vessels-1**

TUESDAY, Oct. 29, 2019		
BIOINFORMATICS SESSIONS	**BIOMED/BIOENG SESSIONS**	**BIOMED/BIOENG SESSIONS**
B4: **Sequencing**	BM7: **Health Records-2**	BM8: **Bio-Med Imaging-2**
B5: **Drugs/Diseases**	BM9: **Biomed Models-2**	BM10: **EEG**
B6: **Computation/Biology**	BM11: **Rehab/Robotics**	BM12: **Sensors-Vessels-2**

WEDNESDAY, Oct. 30, 2019		
BIOINFORMATICS SESSIONS	**BIOMED/BIOENG SESSIONS**	**BIOMED/BIOENG SESSIONS**
W3: **Intell-Health-1**	BM13: **Sensors-Vessels-3**	BM14: **Bio-Med Imaging-3**
W3: **Intell-Health-2**	BM15: **Sleeping/Dyslexia**	BM16: **EEG-EOG-MRI**
W5: **AI-Biomarkers**	W2: **Cardiovascular**	**HAKATHLON**

DAY	TIME	WORKSHOPS SUNDAY, OCT. 27, 2019
1	11:00-13:30	**W4: Personalized Medicine** **(102, 106, 170, 182, 198, 212, 216, 237)** **SESSION CHAIRS: A. Kanterakis and L. Koumakis**

Drugs with fingerprint SMILES similar to coxibs
George Kallergis, Stelios Sfakianakis, Michalis Zervakis and Marios Spanakis

Integrated Network-based Approach for the Treatment & Prevention of IBD with Natural Products
Suganya Chandrababu and Dhundy Bastola

Computational identification of metabolites for pathways related to Huntington's disease
Christiana C. Christodoulou, George Minadakis, Christiana A. Demetriou, Eleni Zamba-Papanicolaou and George M. Spyrou

Clustering and classification of human microbiome data: evaluating the impact of different settings in bioinformatics workflows
Debora Santo, Tatjana Lončar-Turukalo, Blaž Stres, Vladimir Crnojević and Sanja Brdar

Enhancing Clustering of single-cell RNA-seq data by Proximity Learning on Random Projected spaces,
Aristidis Vrahatis, Georgios Dimitrakopoulos, Sotiris Tasoulis and Vassilis Plagianakos

Predicting pathogenic non-coding variants on imbalanced data set using cluster ensemble sampling
Kai-Wen Chuang and Chien-Yu Chen

Zazz: Variant annotation and exploration of Next Generation Sequencing variants
Maria Astrinaki, Alexandros Kanterakis, Helen Latsoudis, George Potamias and Dimitris Kafetzopoulos

Combining Pathway Analysis and Supervised Machine Learning for the Functional Classification of Single-Cell Transcriptomic Data
Theodoros Koutsandreas, Ajdini Bajram, Chara Mastrokalou, Eleftherios Pilalis, Aristotelis Chatziioannou and Ilias Maglogiannis

	13:30-14:30	**BREAK**
	14:30-16:40	**W6: Neuro-Imaging** **(50, 97, 126, 186, 259, 260, 267, 268)** **SESSION CHAIRS: G. Giannakakis and M. Antonakakis**

A Comparison of Inverse Problem Methods for source localization of Epileptic MEG Spikes
Nawel Jmail, Abir Hadriche, Ichrak Behy, Amal Necibi and Chokri Ben Amar

Individualized targeting and optimization of multi-channel transcranial direct current stimulation in drug-resistant epilepsy
Marios Antonakakis, Stefan Rampp, Christoph Kellinghaus, Carsten H. Wolters and Gabriel Moeddel

Combined EEG/MEG Source Reconstruction of Epileptic Activity using a Two-Phase Spike Clustering Approach
Vasileios S. Dimakopoulos, Marios Antonakakis, Gabriel Moeddel, Jörg Wellmer, Stefan Rampp, Michalis Zervakis and Carsten H. Wolters

High-Frequency Oscillations in Epilepsy: A Short Revie
Matthew Fenech, Stefano Seri and Manousos Klados

Automatic absence seizure detection evaluating matching pursuit features of EEG signals
Katerina Giannakaki, Giorgos Giannakakis, Pelagia Vorgia, Manousos Klados and Michalis Zervakis

Applications of PET imaging in epilepsy
Georgios Papadakis, Giorgos Giannakakis, Pelagia Vorgia, Apostolos Karantanas and Kostas Marias

Seizure detection using common spatial patterns and classification techniques
Giorgos Giannakakis, Nikolaos Tsekos, Katerina Giannakaki, Kostas Michalopoulos, Pelagia Vorgia and Michalis Zervakis

DAY	TIME	DAY-2: MONDAY, Oct. 28, 2019		
2	**08:00-08:10**	**OPENING WELCOME**		
	08:10-09:00	Keynote Speech: Sergio Cerruti, "*Advances in Biomedical Signal Processing: Multivariate, Multimodal, Multiorgan and Multiscale Integration of Information for Precision Medicine and Big Data Analysis*"		
	09:00-11:20	**BIOINFORMATICS**	**BIOMED/BIOENGR-1**	**BIOMED/BIOENGR-2**
		B1: Proteins **(28, 52, 141, 165, 185, 206, 223)** **Chair: O. Maruyama**	**BM1: Health Records-1** **(3, 13, 25, 39, 48, 66, 113)** **Chairs: M. Tsiknakis & H. Kondylakis**	**BM2: BioMed Imaging-1** **(5, 24, 68, 85, 99, 120)** **Chair: K. Nikita**
		Exit regions of cavities in proteins *Martin Manak, Alexey Anikeenko and Ivana Kolingerova* **De(con)struction of the lazy-F loop: improving performance of Smith Waterman alignment** *Roman Snytsar* **DegSampler3: Pairwise Dependency Model in Degradation Motif Site Prediction of Substrate Protein Sequences** *Osamu Maruyama and Fumiko Matsuzaki* **The effect of a spastic ataxia associated GBA2 mutation on protein-protein interactions and pathways** *Andrea Kakouri, Christina Votsi, Marios Tomazou, Kyproula Christodoulou and George Spyrou* **Rosetta Ligand-Protein Docking with Self-Adaptive Differential Evolution** *Pedro Henrique Narloch and Marcio Dorn* **SpotDSQ: A 2D-gel image analysis tool for protein spot detection, segmentation and quantification** *Eirini Kostopoulou, Stamos Katsigiannis and Dimitris Maroulis* **AFP-CKSAAP: Prediction of Antifreeze Proteins Using Composition of k-Spaced Amino Acid Pairs with Deep Neural Network** *Muhammad Usman and Jeong A Lee*	**Model Fusion to Enhance the Clinical Acceptability of Long-Term Glucose Predictions** *Maxime De Bois, Mehdi Ammi and Mounîm El Yacoubi* **Fall Detection in EHR using Word Embeddings and Deep Learning** *Henrique Santos, Renata Vieira, Amanda Silva, Maria Carolina Maciel, Haline Maria Burin and Janete Urbanetto* **The Role and Prospects of IoT and Cloud Computing in Remote Health Monitoring** *Euripides Petrakis, Stelios Sotiriadis, Kostas Tsakos, Soultanopoulos Theodoros and Pelagia Tsiachri Renta* **Pseudonymisation with break-the-glass compatibility for health records in federated services** *Micael Pedrosa, André Zúquete and Carlos Costa* **A Mobile App Architecture for Accessing EMRs Using XDS and FHIR** *Yannis Petrakis, Angelina Kouroubali and Dimitrios Katehakis* **ProMiSi Architecture – A tool for the estimation of the progression of multiple sclerosis disease using MRI** *Evanthia Tripoliti, Styliani Zelilidou, Kostas Vlahos, Spiridon Konitsiotis and Dimitrios Fotiadis* **Parametric Transfer Learning based on the Fisher Divergence for Well-being Prediction** *Eirini Christinaki, Tasos Papastylianou, Riccardo Poli and Luca Citi*	**Development and Evaluation of Advanced Image Analysis Techniques for Pediatric Deep Vein Thrombosis Imaging Scans** *Kostas Kardaras, Nikos Apostolou, George I. Lambrou, Michail Sarafidis and Dimitrios Koutsouris* **Deep Supervised Hashing through Ensemble CNN Feature Extraction and Low-rank Matrix Factorization for Retinal Image Retrieval of Diabetic Retinopathy** *W.O.K.I.S. Wijesinghe, Lakmini Chathurika and Charith Chitraranjan* **Predicting Eye Fixations Using Computer Vision Techniques** *Ada Alevizaki, Nikos Melanitis and Konstantina Nikita* **Correlation of Vertebral Absolute Axial Rotations in CAD 3D Models of Adolescent Idiopathic Scoliosis Non-invasively Diagnosed** *Saša Ćuković, Vanja Luković, Wiliam R. Taylor, Wolfgang Birkfellner, Radu Emanuil Petruse and Nenad Filipović* **Motor Imagery Classification via Clustered-Group Sparse Representation** *Vangelis Oikonomou, Spiros Nikolopoulos and Ioannis Kompatsiaris* **A spline approach to parallel-hole collimator deblurring for aSRT-reconstructed SPECT images** *Nicholas Protonotarios, Antonios Charalambopoulos, George Kastis, Krzysztof Kacperski and Athanassios Fokas*
	11:20-13:00	**LUNCH BREAK**		

13:00-13:50	Keynote Speech: Carsten Wolters, "*Reconstruction and manipulation of neuronal networks in the Human Brain*"		
13:50-16:10	**BIOINFORMATICS-2**	**BIOMED/BIOENGR-3**	**BIOMED/BIOENGR-4**

	B2: Molecules **(19, 42, 100, 104, 105, 128, 175)** **CHAIR: G. Spyrou**	**BM3: Biomed Models-1** **(18, 36, 60, 70, 117, 155)** **CHAIR: N. Tsekos**	**BM4: EEG and ECG** **(17, 22, 34, 53, 64, 78, 87)** **CHAIR: H. Shinoda**
	Identification Novel Peptides Conjugated to HIV1 Tat Peptide to Inhibit Ebola Virus Entry by Targeting Niemann Pick C1 Protein *Mutiara Saragih, Filia Stephanie, Ahmad Husein Alkaff and Usman Sumo Friend Tambunan*	**The Use of Computer based Test Batery for the Assessment of Cognitive Functions in Elite-Level Strength Training** *Melda Pelin Yargic, Leyla Aydin, Kenan Erdagi and Erhan Kiziltan*	**Workflow Designer - A web application for visually designing EEG signal processing pipelines** *Petr Ježek and Lukáš Vařeka*
	Parallel Implementation of Motif-Based Clustering for HT-SELEX Dataset *Takayoshi Ono, Shintaro Kato, Koichi Ito, Hirotaka Minagawa, Katsunori Horii, Ikuo Shiratori, Iwao Waga and Takafumi Aoki*	**GPU Implementation of Adaptive Exponential Network Neuromodelling** *Alexandros Neofytou, George Chatzikonstantis, Ioannis Magkanaris, George Smaragdos, Christos Strydis and Dimitrios Soudris*	**ECG Beat Classification by Temporal Logic Synthesis** *Jun Zhou and Weng-Fai Wong*
	Antioxidative capacity of evernic acid and its interactions with TDP1 *Jelena Đorović, Svetlana Jeremić, Nedeljko Manojlović, Dejan Milenković and Zoran Marković*	**Classification of Sleep Stages for Healthy Subjects and Patients With Minor Sleep Disorders** *Christos Timplalexis, Konstantinos Diamantaras and Ioanna Chouvarda*	**Psychophysiological effects of comfortable walking exercise on a working memory task** *Hiroto Tamura, Hiroshi Hagiwara, Koji Kashihara and Hiroyuki Shinoda*
	Nanopore Guided Assembly of Segmental Duplications near Telomeres *Eleni Adam, Tunazzina Islam, Desh Ranjan and Harold Riethman*	**Automatic Scoring of Diabetic foot Ulcers through Deep CNN based Feature Extraction with Low Rank Matrix Factorization** *Lakmini Chathurika, W.O.K.I.S. Wijesinghe and Indika Perera*	**Smoother Adaptive Parametric Spectrograms: An application to EEG under general anesthesia** *Kriton Konstantinidis and Emery Brown*
	Exploring Machine Learning Techniques to Improve Peptide Identification *Fawad Kirmani, Bryan Lane and John Rose*	**Preliminary Evaluation of Robotic Transrectal Biopsy System on an Interventional Planning Software** *Jose Velazco-Garcia, Nikhil Navkar, Shidin Balakrishnan, Julien Abinahed, Abdulla Al-Ansari, Georges Yunes, Adham Darweesh, Khalid Al-Rumaihi, Eftychios Christoforou, Ernst Leiss, Mansour Karkoub and Nikolaos Tsekos*	**Analyzing the Recognition of Color Exposure and Imagined Color from EEG signals** *Alejandro Antonio Torres-Garcia and Marta Molinas*
	Fibrotic Disease Networks highlighting common molecular mechanisms behind fibrosis: Special focus on idiopathic pulmonary fibrosis *Evangelos Karatzas, Alex Delis, George Kolios and George Spyrou*	**MedGaze: Gaze Estimation on WCE Images Based on a CNN Autoencoder** *George Dimas, Dimitris Iakovidis and Anastasios Koulaouzidis*	**On the use of ECG and EMG signals for question difficulty level prediction in the context of Intelligent Tutoring Systems** *Fehaid Alqahtani, Stamos Katsigiannis and Naeem Ramzan*
	Finding High-Order Homologous Microbe Community Modules via Network Embedding *Yunpeng Cai, Juan He, Qianyin Li, Kai Zhang and Zhiyong Tao*		**An Effective Moment of Velocity Feature Extraction for ECG Classification Using Deep Learning** *Mohsen Dorraki, Anahita Fouladzadeh, Andrew Allison and Derek Abbott*

16:10-16:20	**BREAK**		

16:20-18:40	BIOINFORMATICS-3	BIOMED/BIOENGR-5	BIOMED/BIOENGR-6
	B3: Cells **(32, 54, 63, 77, 116, 197, 230)** **CHAIR: H. Matsuda**	**BM5-W1: Cancer Care** **(61, 189, 190, 213, 248, 258, 266** **CHAIRS: M. Tsiknakis & H. Kondylakis**	**BM6: Sensors-Vessels-1** **(12, 15, 33, 40, 41, 57, 67)** **CHAIR: N. Filipovic**

BIOINFORMATICS-3

Importance of Feature Weighing in Cervical Cancer Subtypes Identification
Madhumita Singh and Sushmita Paul

Analyzing Leukocyte Migration Trajectories by Deformable Image Matching
Hironori Shigeta, Shigeto Seno, Yutaka Uchida, Junichi Kikuta, Masaru Ishii and Hideo Matsuda

Comparison of cell growth on the poly (lactic acid) surface coated with separate collagen fibrils with and without plasma treatment
Yury Polikarpov, Alexey Romashkin, Denis Levin, Nikolay Struchkov, Evgeny Alexandrov, Irina Suetina, Marina Mezentseva and Vladimir Nevolin

Inter Disease Relations Based on Human Biomarkers by Network Analysis
Shaikh Farhad Hossain, Altaf-Ul Amin, Shigehiko Kanaya, Ming Huang and Naoaki Ono

Nuclei Detection Using Residual Attention Feature Pyramid Networks
Panagiotis Dimitrakopoulos, Giorgos Sfikas and Christophoros Nikou

Comparison of Brain Networks based on Predictive Models of Connectivity
Fani Deligianni, Jonathan Clayden and Guang-Zhong Yang

Stability Investigation Using Hydrogen Bonds For Different Mutations And Drug Resistance in Non-Small Cell Lung Cancer Patients
Avirup Ghosh and Hong Yan

BIOMED/BIOENGR-5

Cervical Cancer Diagnosis using CervixNet - A Deep Learning Approach
Rohan Gorantla, Rajeev Kumar Singh, Rohan Pandey and Mayank Jain

Using Electronic Patient Reported Outcomes to Foster Palliative Cancer Care: the MyPal Approach
Christos Maramis, Christina Karamanidou, Fatima Schera, Stephan Kiefer, Lefteris Koumakis, Konstantinos Marias, Stefan Hoffmann, Heather Parker, Jonathan Reston, Sheila Payne, Sarka Pospisilova, Richard Rosenquist, Paolo Ghia, Helen Papadaki, Annette Sander, Michael Doubek, Norbert Graf, Julie Ling, Julia Downing, Elpida Pavi and Vassilis Koutkias

Breast cancer heterogeneity investigation: multiple k-means clustering approach
Joanna Tobiasz, Christos Hatzis and Joanna Polanska

OncoNetExplainer: Explainable Predictions of Cancer Types Based on Gene Expression Data
Rezaul Karim, Michael Cochez, Oya Beyan, Stefan Decker, and Christoph Lange

Connected Health as enabler of Cancer Patient Support
Gabriel Signorelli

Computational modeling of psychological resilience trajectories during breast cancer treatment
Georgios Manikis, Konstantina Kourou, Paula Poikonen-Saksela, Haridimos Kondylakis, Evangelos Karademas, Kostas Marias, Dimitrios Katehakis, Lefteris Koumakis, Angelina Kouroubali, Ruth Pat-Horenczyk, Dimitrios Fotiadis, Manolis Tsiknakis and Panagiotis Simos

DESIREE DEMO - a web-based software ecosystem for the personalized, collaborative and multidisciplinary management of primary breast cancer
Nekane Larburu, Naiara Muroand Ivan Macia

BIOMED/BIOENGR-6

Detecting Heart Anomalies Using Mobile Phones and Machine Learning
Elhoussine Talab, Omar Mohamed, Labeeba Begum, Fadi Aloul and Assim Sagahyroon

Correlation of DWI and DCE MRI Markers for the Study of Perfusion of the Lower Limb in Patients with Peripheral Arterial Disease
Georgios S. Ioannidis, Katerina Nikiforaki and Apostolos Karantanas

SD-Unet:A Structured Dropout Form U-Net for Retinal Vessel Segmentation
Changlu Guo, Márton Szemenyei, Yang Pei, Yugen Yi and Wei Zhou

User-independent classification of emotions in a mixed arousal-valence model
Mauro Nascimben, Thomas Zoëga Ramsøy and Luis Emilio Bruni

Repeatability Study on a Classifier for Gastric Cancer Detection from Breath Sensor Data
Emmi Turppa, Inese Polaka, Edgars Vasiljevs, Juha M. Kortelainen, Gidi Shani, Marcis Leja and Hossam Haick

Simulation of Deployment of Multiple Stents Within Deformable Artery
Tijana Djukic, Igor Saveljic, Gualtiero Pelosi, Oberdan Parodi and Nenad Filipovic

Smeared FE model of heart wall: electrophysiology coupled with muscle mechanics
Milos Kojic, Miljan Milosevic, Vladimir Simic, Bogdan Milicevic, Vladimir Geroski and Nenad Filipovic

DAY	TIME	DAY-3: TUESDAY, Oct. 29, 2019		
3	08:10-09-00	Keynote Speech: Metin Akay, "*Brain Cancer Chip for Precision Medicine*"		
	09:00-11:20	**BIOINFORMATICS-4**	**BIOMED/BIOENGR-7**	**BIOMED/BIOENGR-8**
		B4: Sequencing **(9, 111, 114, 144, 226, 228, 264, 271)** **CHAIR: M. Masseroli**	**BM7: Health Records-2** **(73, 180, 211, 219, 238, 257, 272)** **CHAIR: D. Koutsouris**	**BM8: BioMed Imaging-2** **(95, 130, 138, 148, 156, 202, 265)** **CHAIR: A. Conci**
		Regressions of Clustered Gene Expression Data Manifest Tumor-Specific Genes in Urinary Bladder Cancer *Michail Sarafidis, Apostolos Zaravinos, Dimitra Iliopoulou, Dimitrios Koutsouris and George I. Lambrou*	**MORPHER - A Hybrid Platform to Support Modeling of Outcome and Risk Prediction in Health Research** *Harry Freitas da Cruz, Benjamin Bergner, Orhan Konak, Frederic Schneider, Philipp Bode, Conrad Lempert and Matthieu-P. Schapranow*	**Organs-at-risk contouring on head CT for RTplanning using 3D Slicer– a preliminary study** *Franck Desaize, Nolwenn Jegou, Gobert Lee, Mariusz Bajger, Oscar Acosta, Julie Leseur, Renaud De Crevoisier and Martin Caon*
		Exploring Systematic Errors in Sequencing Technologies *Shamima Nasrin and Atif Rahman*	**Automatic Estimation of the Nutritional Composition of Foods as part of the GlucoseML Type 1 Diabetes Self-Management System** *Fotis Konstantakopoulos, Eleni Georga, Kostas Klampanas, Dimitris Rouvalis, Nikolaos Ioannou and Dimitrios Fotiadis*	**Development of a user-friendly application for DICOM image segmentation and 3D visualization of a brain tumor** *Tijana Sustersic, Vesna Rankovic and Nenad Filipovic*
		Technology and Species independent Simulation of Sequencing data and Genomic Variants *Filippo Geraci, Riccardo Massidda and Nadia Pisanti*		**A novel approach for the segmentation of breast thermal images combining image processing and collective intelligence** *Maira Beatriz Hernandez Moran, Guilherme Henrique Apostolo, Adriel Araújo, Eduardo Andrade, José Viterbo Filho and Aura Conci*
		De novo sequence-based method for ncRPI prediction using structural information *Michele Leone, Marta Galvani and Marco Masseroli*	**Multi-source ensemble transfer approach for medical text auxiliary diagnosis** *Xinfa Li, Yun Yang and Po Yang*	**Towards the Substitution of Real with Artificially Generated Endoscopic Images for CNN Training** *Dimitris Diamantis, Athena Zacharia, Dimitris Iakovidisand Anastasios Koulaouzidis*
		Parallelized pipeline for whole genome shotgun metagenomics with GHOSTZ-GPU and MEGAN *Masahito Ohue, Marina Yamasawa, Kazuki Izawa and Yutaka Akiyama*	**One-year Mortality Prediction in ICU Patients with Diagnosis of Sepsis Driven by Population Similarities** *J.E Garcia-Gallo, N.J Fonseca-Ruiz, L.A Celi and J.F Duitama-Muñoz*	**Image segmentation of the pulmonary acinus imaged by synchrotron X-ray tomography** *Branko Arsić, Mihailo Obrenović, Miloš Anić, Akira Tsuda and Nenad Filipović*
		MemAlign: A Memory Structure to Accelerate Gene Sequencing *Meysam Roodi and Andreas Moshovos*	**Needle Optimization for Wrist-Based Electronic Mosquito: Pilot Human Testing** *Jonas Teixeira, Robert Wilkes, Orly Yadid-Pecht and Martin Mintchev*	**Blood flow SPH simulation with elastic deformation of blood vessels** *Antoni Junior and Helton Bíscaro*
		Multithreaded Parallel Sequence Alignment Based on Needleman-Wunch Algorithm *Veska Gancheva and Ivaylo Georgiev*	**Engaging Conversational Agents in Palliative Care: A feasibility study and Preliminary Assessment** *Maria Chatzimina, Lefteris Koumakis, Kostas Marias and Manolis Tsiknakis*	
		Combined statistics for differential expression analysis of RNA-sequencing data *Dionysios Fanidis and Panagiotis Moulos*	**Evaluation of a Serious Game promoting Nutrition and Food Literacy: Experiment Design and Preliminary Results** *Konstantinos Mitsis, Konstantia Zarkogianni, Kalliopi Dalakleidi, George Mourkousis and Konstantina Nikita*	

11:20-13:00	LUNCH BREAK		

13:00-13:50	Keynote Speech: Alejandro F. Frangi, "*Computational Medicine: from advanced diagnosis and interventional planning to in silico trials of endovascular devices*"

13:50-16:10	BIOINFORMATICS-5	BIOMED/BIOENGR-9	BIOMED/BIOENGR-10
	B5: Drugs/Diseases (29, 81, 98, 133, 184, 188, 242) CHAIR: G. Spyrou	**BM9: Biomed Models-2 (51, 124, 210, 221, 236, 249, 255) CHAIR: V. Sakkalis**	**BM10: EEG (71, 83, 112, 166, 168, 202, 207) CHAIR: M. Zervakis**

BIOINFORMATICS-5

Adaptive short term ahead tumor growth inhibition prediction subjected in anticancer agents given in combination
Sotirios Liliopoulos and George Stavrakakis

In silico assessment of the structural, functional and stability impact of a nonsense PRF1 mutation with uncertain clinical significance; identified in 2 unrelated Cypriot Triple-Negative Breast Cancer patients
Maria Zanti, Maria A Loizidou, Margarita Zachariou, Kyriaki Michailidou, Kyriacos Kyriacou, Andreas Hadjisavvas and George M Spyrou

Deleterious Impact of Mutational Processes on Transcription Factor Binding Sites in Human Cancer
Pietro Pinoli, Eirini Stamoulakatou, Stefano Ceri and Rosario Michael Piro

Identification of differentially expressed subpathways using a consensus approach
Panos Balomenos, Andrei Dragomir, Athanasios Tsakalidis and Anastasios Bezerianos

Differences in the Progression from Mild Cognitive Impairment to Alzheimer's Disease between APOE4 Carriers and Non-Carriers
Antonio Martinez-Torteya, Alejandro Trejo-Castro, José Celaya-Padilla and José Tamez-Peña

Hybrid Modeling of Ebola Propagation
Cyrus Tanade, Nathanael Pate, Elianna Paljug, Ryan Hoffman and May Wang

Parkinson's Disease Mid-brain Assessment using MR T2 Images
Sara Soltaninejad, Pengda Xu and Irene Cheng

BIOMED/BIOENGR-9

A Wearable Ultrasound Methodology for Creating a Real Time Near 3D Model of the Heart
Garrett Goodman and Nikolaos Bourbakis

Drug-Drug Interactions Prediction based on Drug Embedding and Graph Auto-Encoder
Ishani Mondal, Sukannya Purkayastha, Sudeshna Sarkarand Pawan Goyal

Complex brain networks and simulated military reactions using a virtual reality system
Oscar Mosquera, Daniel Guzmán, Jhonnatan Zamudio, Jose Garcia, Cristhian Rodriguez and Daniel Alfonso Botero Rosas

Monitoring of Orientation of Cells by Electric Impedance: Test on Oriented Cells Using Micro Striped Grooves Pattern by Photolithography
Shigehiro Hashimoto and Kazuyuki Abe

Banded Pair-HMM Algorithm for DNA Variant Calling and Its Hardware Accelerator Design
Ming-Hung Chen, Mao-Jan Lin, Yu-Cheng Li and Yi-Chang Lu

Surgical Audio Guidance SurAG: extracting non-invasively meaningful guidance information during minimally invasive procedures
Alfredo Illanes, Thomas Sühn, Nazila Esmaeili, Iván Maldonado, Anna Schaufler, Chien-Hsi Chen, Axel Boese and Michael Friebe

Normative and Fuzzy Aspects of Medical AI
Aspassia Daskalopulu, Eleutherios Tsoukalas and Dimitrios Bargiotas

BIOMED/BIOENGR-10

Estimation of brain dynamics under visuomotor task using functional connectivity analysis based on graph theory
Thi Mai Phuong Nguyen, Xinzhe Li, Yoshikatsu Hayashi, Shiro Yano and Toshiyuki Kondo

Automated Assessment of Pain Intensity based on EEG Signal Analysis
Panagiotis A. Bonotis, Dimosthenis C. Tsouros, Panagiotis N. Smyrlis, Alexandros T. Tzallas, Nikolaos Giannakeas, Evripidis Glavas and Markos Tsipouras

A Time-Frequency Distribution Based Approach for Detecting Tonic Cold Pain using EEG Signals
Rami Alazrai, Saifaldeen Al-Rawi and Mohammad I. Daoud

Effective Connectivity in the Primary Somatosensory Network using Combined EEG and MEG
Konstantinos Politof, Marios Antonakakis, Andreas Wollbrink, Michalis Zervakis and Carsten H. Wolters

Sparse EEG Source Localization Under the Variational Bayesian Framework
Vangelis Oikonomou and Ioannis Kompatsiaris

On the Entropy of Brain Anatomic Regions for Complex Problem Solving
Gonul Gunal Degirmendereli, Sharlene D. Newman and Fatos T. Yarman Vural

Experiencing the Light Through our Skin - an EEG Study of Colored Light on Blindfolded Subjects
Andreas Wulff-Abramsson, Mads Deibjerg Lind, Stine Louring Nielsen, George Palamas, Luis Emilio Bruni and Georgios Triantafyllidis

16:10-16:20	BREAK		

16:20-18:40	BIOINFORMATICS-6	BIOMED/BIOENGR-11	BIOMED/BIOENGR-12
	B6: Computation/Biology **(20, 134, 164, 171, 194, 201, 256)** CHAIR: G. Potamias	**BM11:** Rehab/Robotics **(7, 10, 46, 103, 118, 153, 209)** CHAIR: E. Petrakis	**BM12:** Sensors-Vessels-2 **(69, 72, 75, 79, 80, 122, 125)** CHAIR: V. Koutkias

BIBE

BIOINFORMATICS-6

Discovery of Potential Northern African Natural Product Compounds as Dengue Virus NS5 Methyltransferase Inhibitor: An in silico Approach
Mutiara Saragih, Filia Stephanie, Ahmad Husein Alkaff and Usman Sumo Friend Tambunan

Towards Reproducible Bioinformatics: The OpenBio-C Scientific Workflow Environment
Alex. Kanterakis, Galateia Iatraki, Konstantina Pityanou, Lefteris Koumakis, Nikos Kanakaris, Nikos Karacapilidis and George Potamias

Enabling Ontology-based Search: A Case Study in the Bioinformatics Domain
Alexandros Kyriakakis, Lefteris Koumakis, Alexandros Kanterakis, Galateia Iatraki, Manolis Tsiknakis and George Potamias

Finding Attractors in Biological Models Based on Boolean Dynamical Systems Using Hitting Set
Carlos Reynaldo Portocarrero Tovar, Eloi Araujo, Danilo Carastan-Santos, David Correa Martins Jr and Luiz Rozante

Systems biology in heterogenous tissues: Integrating multiple *omics datasets to under-stand hematopoietic differentiation
Jens Lichtenberg, Guanjue Xiang, Elisabeth Heuston, Belinda Giardine, Cheryl A. Keller, Ross Hardison and David Bodine

Mathematical modelling and effect size analysis in support of searching for the proteomic signature of radiotherapy toxicity
Kinga Leszczorz, Omid Azimzadeh, Soile Topio, Michael Atkinson and Joanna Polańska

Heuristics for the Specific Substring Problem with Hamming Distance
Lucas Rocha, Said Sadique, Marco A. Stefanes and Eloi Araujo

BIOMED/BIOENGR-11

Meta-Learning for Avatar Kinematics Reconstruction in Virtual Reality Rehabilitation
Cristian Axenie, Armin Becher, Daria Kurz and Thomas Grauschopf

Evolution of Biomaterials for Dental Implants and Futuristic Developments
Tuhin Sengupta and Muthu P

Determination of Corneal Nonlinear Viscoelastic Biomechanical Properties using Corvis ST
Aidana Zhalgas, Match Wai Lun Ko and Jong Kim

Single-channel SSVEP-based BCI for robotic car navigation in real world conditions
Cristina Farmaki, Myrto Krana, Matthew Pediaditis, Emmanouil Spanakis and Vangelis Sakkalis

Towards a Flexible Wrist-Worn Thermotherapy and Thermoregulation Device
Panagiotis Kassanos, Florent Seichepine, Meysam Keshavarz and Guang-Zhong Yang

A Semi-Autonomous Robotic System for Remote Trauma Assessment
Bharat Mathur, Anirudh Topiwala, Saul Schaffer, Michael Kam, Hamed Saeidi, Thorsten Fleiter and Axel Krieger

Hand-Eye Coordination: Automating the Annotation of Physician-Patient Interactions
Daniel Gutstein, Enid Montague, Jacob Furst and Daniela Raicu

BIOMED/BIOENGR-12

Cardiac left ventricular ultrasound image sequence recognition and tracking
Wei-Yen Hsu

BioCoStent: a holistic approach for development of a drug-eluting stent with retinoic acid
Georgia Karanasiou, Savvas Kyriakidis, Dimitris Pleouras, Antonis Sakellarios, Anargyros Moulas, Arsen Semertzioglou and Dimitrios Fotiadis

A Novel PCA-Based fMRI Noise Reducing Wishart Filter to Improve Diagnosis of Neurodegeneration
Nikhil Boddu

Generation of virtual patients for in silico cardiomyopathies drug development
Vasileios Pezoulas, Nikos Tachos and Dimitrios Fotiadis

A Low Complexity and Cost Method to Diagnose Arterial Stenosis Using Lightwave Wearables
George Karagannidis, Angeliki Papathanasiou, Panagiotis Diamantoulakis, Athanasios Saratzis and Nikolaos Saratzis

Numerical simulation plaque formation and progression in the left coronary artery
Igor Saveljic, Dalibor Nikolic, Tijana Djukic, Oberdan Parodi and Nenad Filipovic

A Robust Neural Network-based method to estimate Arterial Blood Pressure Using Photoplethysmography
Buddhishan Manamperi and Charith Chitraranjan

18:40-19:00	**BREAK**
19:00-21:00	**GALA DINNER and AWARDS**

DAY	TIME	DAY-4: WEDNESDAY, Oct. 30, 2019		
4	08:10-09:00	Keynote Speech: Dave Robertson, "***Building a Knowledge Graph for UK Health Data Science***"		
	09:00-11:20	**WORKSHOPS**	**BIOMED/BIOENGR-13**	**BIOMED/BIOENGR-14**
		W3: Intell-Digital Health-1 (8, 26, 27, 37, 68, 86, 92) **CHAIR: D. Tzovaras**	**BM13: Sensors-Vessels-3 (139, 147, 152, 154, 159, 167, 225)** **CHAIR: N. Filipovic**	**BM14: BioMed Imaging-3 (205, 208, 232, 244, 270, 273)** **CHAIR: A. Krieger**
		Design and Implementation of a Precision Oxygen Delivery Control System in Facial Masks *Petros Toumpaniaris, Panagiotis Katrakazas, George I. Lambrou, Athanasios Papanikitas, Michail Sarafidis, Sotiris Pavlopoulos and Dimitrios Koutsouris*	**Characterization and Modeling of a Flexible Tetrapolar Bioimpedance Sensor and Measurements of Intestinal Tissues** *Panagiotis Kassanos, Florent Seichepine and Guang-Zhong Yang*	**Bone Fracture Identification in X-ray Images using Fuzzy Wavelet Features** *Michael Vasilakakis, Varvara Iosifidou, Panagiota Fragkaki and Dimitris Iakovidis*
		Heterogeneity in Asthma Medication Adherence Measurement *Holly Tibble, Amy Chan, Edwin Mitchell, Rob Horne, Mehrdad Mizani, Aziz Sheikh and Athanasios Tsanas*	**Imaging with ultrafast light pulse in scattering media using the DRTS method** *Anastasios Georgakopoulos, Konstantinos Politopoulos and Efstratios Georgiou*	**BNU-Net: a Novel Deep Learning Approach for LV MRI Analysis in Short-Axis MRI** *Wenhui Chu, Giovanni Molina, Nikhil Navkar, Christoph Eick, Aaron Becker and Nikolaos Tsekos*
		Privacy Protection with Pseudonymization and Anonymization In a Health IoT System - Results from OCARIoT Project *Sergio Ribeiro and Emilio Nakamura*	**A novel methodology for detection of lumen, outer wall, plaques and stent struts in coronary arteries using optical coherence tomography** *Savvas Kyriakidis, Antonis Sakellarios, Georgia Karanasiou and Dimitrios Fotiadis*	**Towards a Novel Way to Predict Deficits After a Brain Lesion: A Stroke Example** *Georgios Klados, Michalis Zervakis, Rosalia Dacosta-Aguayo, Antonio Fratini and Manousos Klados*
		Investigating motility and pattern formation in pluripotent stem cells through agent-based modeling *Minhong Wang, Athanasios Tsanas, Guillaume Blin and Dave Robertson*	**Atherosclerotic plaque growth prediction in coronary arteries using a computational multi-level model; the effect of diabetes** *Dimitris Pleouras, Antonios Sakellarios, Georgia Karanasiou, Savvas Kyriakidis, Panagiota Tsompou, Vassiliki Kigka and Dimitrios Fotiadis*	**Prior guided segmentation and nuclei feature based abnormality detection in cervical cells** *Ratna Saha, Mariusz Bajger and Gobert Lee*
		Predicting Eye Fixations Using Computer Vision Techniques *Ada Alevizaki, Nikos Melanitis and Konstantina Nikita*	**A multimodal advanced approach for the stratification of carotid artery disease** *Michalis D. Mantzaris, Vassiliki T. Potsika, Panagiotis K. Siogkas, Vassiliki I. Kigka, Vasileios C. Pezoulas, Ioannis G. Pappas, Themis P. Exarchos, Igor B. Koncar, Jaroslav Pelisek, Evangelos Andreakos and Dimitrios I. Fotiadis*	**Evaluation of quantitative features and convolutional neural networks for nodule identification in thyroid thermographies** *Maira Beatriz Hernandez Moran, Aura Conci and Adriel Araújo*
		A Social Robot-based Platform for Prevention of Childhood Obesity *Andreas Triantafyllidis, Anastasios Alexiadis, Dimosthenis Elmas, Konstantinos Votis and Dimitrios Tzovaras*	**An Approach Towards Automatic Detection of Toxoplasmosis using Fundus Images** *Adithi Deborah Chakravarthy, Dilanga Abeyrathna, Mahadevan Subramaniam and Parvathi Chundi*	**Adaptation and Evaluation of Deep Learning Techniques for Skin Segmentation on Novel Abdominal Dataset** *Anirudh Topiwala, Lidia Al-Zogbi, Thorsten Fleiter and Axel Krieger*
		Mobistudy: an open mobile-health platform for clinical research *Dario Salvi, Jameson Lee, Carmelo Velardo, Rishi Arvin Goburdhun and Lionel Tarassenko*	**Interpolating maps between neural response spaces for chemosensing with fruit fly antenna sensors** *Martin Strauch, Karl Krüger, Latha Mukunda, Alja Lüdke, Giovanni Galizia and Dorit Merhof*	

11:20-13:00	**LUNCH BREAK**		
13:00-15:20	**WORKSHOPS**	**BIOMED/BIOENGR-15**	**BIOMED/BIOENGR-16**

	W3: Intell-Digital Health-2 (93, 96, 107, 163, 178, 192) CHAIR: A. Tsanas	**BM15: Sleeping/Dyslexia (38, 58, 145, 157, 219, 189) CHAIR: M. Papadopouli**	**BM15: EEG-EOG-MRI (214, 215, 220, 229, 251, 254) CHAIR: C. Pattichis**
	Abnormal Behavior Detection for elderly people living alone leveraging IoT sensors *Maria Koutli, Natalia Theologou, Athanasios Tryferidis and Dimitrios Tzovaras*	**Automated Sleep Spindle Detection System using Period-Amplitude Analysis** *Panagiotis Rizogiannis, Periklis Ktonas, Hara Tsekou, Thomas Paparrigopoulos, Dimitris Dikeos and Errikos Chaim Ventouras*	**Sparse Representations on DW-MRI: A study on pancreas** *Anastasia Pentari, Grigorios Tsagkatakis, Kostas Marias, Georgios C. Manikis, Nikolaos Kartalis, Nikolaos Papanikolaou and Panagiotis Tsakalides*
	Visualizing the Associations between Acupoints based on Diseases They Treat *Kun-Chan Lan, Jun-Xiang Zhang and Ying-Hsiu Lin*	**Wavelet singularity analysis for CAP sleep delineation** *David Israel Medina, Martin Oswaldo Mendez, Ioanna Chouvarda and José Salome Murguía*	**A Temporal Convolution Network Solution for EEG Motor Imagery Classification** *Na Lu, Tao Yin and Xue Jing*
	A Machine Learning Approach for Non-Invasive Diagnosis of Metabolic Syndrome *Suparno Datta, Anne Schraplau, Harry Freitas da Cruz, Jan Philipp Sachs, Frank Mayer and Erwin Böttinger*	**Automated Screening of Dyslexia via Dynamical Recurrence Analysis of Wearable Sensor Data** *Michaela Areti Zervou, George Tzagkarakis and Panagiotis Tsakalides*	**Impedance between Micro-electrodes of a Pair of Concentric Cylinders for Estimation of Local Cell Configuration** *Shigehiro Hashimoto*
	Recognition of breathing activity and medication adherence using LSTM Neural Networks *Dionysis Pettas, Stavros Nousias, Evaggelia Zacharaki and Konstantinos Moustakas*	**Towards a robust and accurate screening tool for dyslexia with data augmentation using GANs** *Thomais Asvestopoulou, Victoria Manousaki, Antonis Psistakis, Erjona Nikolli, Vassilios Andreadakis, Ioannis M. Aslanides, Yannis Pantazis, Ioannis Smyrnakis and Maria Papadopouli*	**A Formal SPN Methodology for Single (1D) and Multiple Channels (2D) EEG brain Activity Representations/Analysis/Diagnosis** *S. Manganas and N. Bourbakis*
	Fuzzy Inference System for Risk Evaluation in Gestational Diabetes Mellitus *Carlos Salort Sanchez, Suzanne Smyth, Elizabeth Tully, Joanna Griffin, Luke Heaphy, Niamh Redmond, Fionnuala Breathnach, Jan Baumbach and Cristian Axenie*	**Multi-source ensemble transfer approach for medical text auxiliary diagnosis** *Xinfa Li, Yun Yang and Po Yang*	**Motor Imagery EEG-EOG Signals based Brain Machine Interface (BMI) for a Mobile Robotic Assistant (MRA)** *Dulith Chinthaka, Isuru Ruhunage, Sanjaya Mallikarachchi, Janith Sandaruwan and Thilina Lalitharatne*
	Exploring telephone-quality speech signals towards Parkinson's disease assessment in a large acoustically non-controlled study *Athanasios Tsanas and Siddharth Arora*	**Functional Network Connectivity Analysis in Absence Epilepsy Using Stargazer Mice** *Andreas Zacharakis, Manthos Kampourakis, Orestis Mousouros, Ganna Palagina, Jochen Meyer, Stelios Manolis Smirnakis, Maria Papadopouli and Ioannis Smyrnakis*	**Integrating machine learning with symbolic reasoning to build an explainable AI model for stroke prediction** *Nicoletta Prentzas, Constantinos Pattichis, Antonis Kakas, Efthyvoulos Kyriacou and Andrew Nicolaides*

15:20-15:30	**BREAK**		

15:30-18:00	WORKSHOPS

W5: Biomarkers/Radiomics **(90, 109, 123, 137, 140, 176, 250, 263)** **SESSION CHAIRS: K. Marias & N. Papanikolaou**	**W2: Cardiovascular Modeling** **(51, 69, 115, 129, 131, 177)** **SESSION CHAIRS: K. Marias & N. Papanikolaou**
Ischemic Stroke Lesion Prediction in CT Perfusion Scans Using Multiple Parallel U-Nets Following by a Pixel-level Classifier *Mohsen Soltanpour, Russell Greiner, Pierre Boulanger and Brian Buck*	**Cardiac left ventricular ultrasound image sequence recognition and tracking** *Wei-Yen Hsu*
Comparison of machine learning algorithms and oversampling techniques for urinary toxicity prediction after prostate cancer radiotherapy *Eugenia Mylona, Clement Lebreton, Pierre Fontaine, Stéphane Supiot, Nicolas Magné, Gilles Crehange, Renaud de Crevoisier and Oscar Acosta*	**Interactive and Immersive Image-guided Control of Interventional Manipulators with a Prototype Holographic Interface** *Cristina Morales Mojica, Jose Velazco-Garcia, Nikolaos Tsekos, Haoran Zhao, Ioannis Seimenis, Ernst Leiss, Dipan Shah, Andrew Webb and Aaron Becker*
Radiomics to Predict Prostate Cancer Aggressiveness: a Preliminary Study *Danila Germanese, Laura Mercatelli, Sara Colantonio, Vittorio Miele, Maria Antonietta Pascali, Claudia Caudai, Nicola Zoppetti, Roberto Carpi, Andrea Barucci, Elena Bertelli and Simone Agostini*	**Multi-Contrast MRI Volume Alignment Via ECC Maximization** *Nikolaos Nikolikos, Nefeli Lamprinou, Anastasia Boile and Emmanouil Psarakis*
Automatic Detection and Segmentation of Lung Lesions using Deep Residual CNNs *João B. Sá Carvalho, Mário A. T. Figueiredo and Nickolas Papanikolaou*	**Design and Simulation of Patient-Specific Tissue-Engineered Bifurcated Right Ventricle-Pulmonary Artery Grafts using Computational Fluid Dynamics** *Seda Aslan, Yue-Hin Loke, Paige Mass, Kevin Nelson, Enoch Yeung, Jed Johnson, Justin Opfermann, Hiroshi Matsushita, Takahiro Inoue, Henry Halperin, Laura Olivieri, Narutoshi Hibino and Axel Krieger*
Multiple Kernel Learning applied to the prediction of prostate cancer recurrence from MRI radiomics features *Diana Marcela Marín Castrillón, Pierre Fontaine, Khemara Gnep, Renaud Crevoisier, Gloria Díaz and Oscar Acosta*	**Automated Segmentation and 4-D reconstruction of the Heart Left Ventricle from CINE MRI** *Giovanni Molina, Jose D. Velazco-Garcia, Dipan Shah, Aaron T. Becker and Nikolaos V. Tsekos*
Neural Network Training Data Profoundly Impacts Texture-Based Intravascular Image Segmentation *Akshay Gowrishankar, Lambros Athanasiou, Max Olender and Elazer Edelman*	**Design and initial implementation of a Computer Aided Diagnosis System for PET/CT Solitary Pulmonary Nodule Risk Estimation** *George Tzanoukos, Pavlos Kafouris, Alexandros Georgakopoulos, Anastasios Gaitanis, Dimitris Maroulis, Sofia Chatziioannou and George Spyrou*
Scale-space DCE-MRI radiomics analysis based on Gabor filters for predicting breast cancer therapy response *Georgios Manikis, Maria Venianaki, Iraklis Skepasianos, Georgios Papadakis, Thomas Maris, Sofia Aggelaki, Apostolos Karantanas and Kostas Marias*	

HACKATHLON AWARDS

CLOSING REMARKS