Technical Program

Cylindrical copper cases for medicines, Pafos Museum

Edited by:
Efthyvoulos Kyriacou
Vasilis Promponas
Christos Loizou
Christos N. Schizas
Constantinos S. Pattichis

Session: eHealth

Time & Place: 13:00-14:45 – Les Etoiles

Chairpersons: **Ilias Maglogiannis,** *Department of Computer Science and Biomedical Informatics, University of Central Greece, Greece*

Nicolas Stylianides, *Department of Computer Science, University of Cyprus, Cyprus*

Sun. 1.1   **13:00-13:15**

Intensive Care Cloud

Nicolas Stylianides[1], Harald Gjermundrod[2], Marios Dikaiakos[1] and Theodoros Kyprianou[3]

[1]Department of Computer Science, University of Cyprus, Nicosia, Cyprus; [2]Department of Computer Science, University of Nicosia, Nicosia, Cyprus; [3]St. George's Medical School University of Nicosia, Nicosia, Cyprus

Sun. 1.2   **13:15-13:30**

A Collaborative Wiki-based Tool for Semantic Management of Medical Interventions

Dionysia Kontotasiou[1], Charalabos Bratsas[2] and Panagiotis Bamidis[2]

[1]Information Technologies Institute (ITI), Centre of Research and Technology Hellas (CERTH), Thessaloniki, Greece; [2]Medical Informatics Laboratory, School of Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece

Sun. 1.3   **13:30-13:45**

A Method to Summarize Disease Based Temporal State of Human Organ using Laboratory Test Data and UMLS Knowledge

Soubhik Paul, Raj Roy, Swarupananda Bissoyi, Sandip Bhaumik, Meru Patil and Vivekeshwar Bhardwaj

Samsung India Software Operation, Bangalore, India

Sun. 1.4   **13:45-14:00**

Medical Guidelines Reconciling Medical Software and Electronic Devices: Imatinib Case-study

Alena Simalatsar and Giovanni De Micheli

Ecole Polytechnique F´ed´erale de Lausanne, Lausanne, Switzerland

Sun. 1.5   **14:00-14:15**

Enabling Data Protection through PKI encryption in IoT m-Health Devices

Charalampos Doukas[1], Ilias Maglogiannis[2], Vasiliki Koufi[3], Flora Malamateniou[3] and George Vassilacopoulos[3]

[1]Department of Information and Communication Systems Engineering, University of Aegean; [2]Department of Computer Science and Biomedical Informatics, University of Central Greece; [3]Department of Digital Systems, University of Piraeus, Greece

Sun. 1.6   **14:15-14:30**

Electronic Health Record Diagnosis tool and a cross reference between coding standards

Harris Soteriades[1], Kleanthis Neokleous[1], George Tsouloupas[2], Antonis Jossif[3] and Christos Schizas[4]

[1]Department of Computer Science, University of Cyprus, Nicosia, Cyprus; [2]The Cyprus Society for Medical Informatics, Nicosia, Cyprus; [3]"Paedi" Center for Specialized Pediatrics, Nicosia, Cyprus; [4]Department of Computer Science, University of Cyprus, Nicosia, Cyprus

Sun. 1.7   **14:30-14:45**

MammoApplet: an interactive Java applet tool for manual annotation in medical imaging

Christian Mata, Arnau Oliver, Albert Torrent, Joan Martı

Computer Vision and Robotics Group, University of Girona, Girona, Spain

Coffee Break   14:45-15:15

Session: **Databases: Integration, Interoperability, Visualization, and Data Mining**

Time & Place: **13:00-14:45 – Minerva**

Chairpersons: **Ioan Lucian Muntean,** *Computer Science Department, Technical University of Cluj-Napoca, Romania*

Manolis Christodoulakis, *Department of Electrical and Computer Engineering, University of Cyprus, Cyprus*

Sun. 2.1   13:00-13:15

Mining disease integrated ontology

Taysir Soliman[1], Marwa Hussein[1] and Mohamed El-Sharkawi[2]

[1]Information Systems Department, Faculty of Computers & Information, Assiut University, Egypt; [2]Information Systems Department, Faculty of Computers & Information, Cairo University, Egypt

Sun. 2.2   13:15-13:30

Method of extracting sentences about protein interaction from the literature on protein structure analysis using selective transfer learning

Shun Koyabu, Riku Kyougoku and Takenao Ohkawa

Graduate School of System Informatics, Kobe University, Rokkodai, Nada, Kobe, Japan

Sun. 2.3   13:30-13:45

Visualizing High Dimensional Datasets Using Parallel Coordinates: Application to Gene Prioritization

Thomas Boogaerts, Leon-Charles Tranchevent, Georgios A. Pavlopoulos, Jan Aerts and Joos Vandewalle

ESAT-SCD-SISTA / IBBT-K.U.Leuven Future Health Department, Katholieke Universiteit Leuven, Leuven, Belgium

Sun. 2.4   13:45-14:00

GIDT - A Tool for the Identification and Visualization of Genomic Islands in Prokaryotic Organisms

Haswanee Goodur, Vyasanand Ramtohul and Shakuntala Baichoo

Department of Computer Science and Engineering, University of Mauritius

Sun. 2.5 **14:00-14:15**

GCVT – A Genome Comparison and Viewing Tool

Shakuntala Baichoo, Parinita Ujoodha and Yovish Bissessur

Department of Computer Science and Engineering, University of Mauritius

Sun. 2.6 **14:15-14:30**

Towards an era of epidemiological databases for autoimmune diseases

Vassiliki Gkantouna[1], Marina Ioannou[1], Athanasios Tsakalidis[1], Emmanouil Viennas[1], Konstantinos Poulas[2], Ioannis Tsaknakis[3] and Giannis Tzimas[3]

[1]Department of Computer Engineering and Informatics, Faculty of Engineering, University of Patras, Patras, Greece; [2]Department of Pharmacy, School of Health Sciences, University of Patras, Patras, Greece; [3]Department of Applied Informatics in Management & Economy, Faculty of Management and Economics, Technological Educational Institute of Messolonghi, Messolonghi, Greece

Sun. 2.7 **14:30-14:45**

Experiences in Designing a Distributed Service-Oriented Platform for In-Silico Biomarker Discovery and Validation

Ioan Lucian Muntean[1], Bogdan Mircea Rotaru[1], Ramona Suharoschi[2] and Cristina Adela Iuga[3]

[1]Computer Science Department, Technical Univesity of Cluj-Napoca, Romania; [2]Food Science and Technology Department, University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Romania; [3]Drug Analysis Department, University of Medicine and Pharmacy, Cluj-Napoca, Romania

Coffee Break 14:45-15:15

Session:	**ECG**
Time & Place:	**13:00-14:45 – Diana**
Chairpersons:	**Hossein Rabbani,** *Department of Medical Physics and Engineering, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran & Medical Image and Signal Processing Research Center, Isfahan University of Medical Sciences, Isfahan, Iran*
	Alexandros Kyriakides, *KIOS Research Center, Department of Electrical & Computer Engineering, University of Cyprus, Nicosia, Cyprus*

Sun. 3.1   13:00-13:15

ECG Analysis in the Time-Frequency Domain

Neophytos Neophytou[1], Alexandros Kyriakides[2] and Costas Pitris[2]

[1]Department of Biomedical Engineering, University of Patras; [2]KIOS Research Center, Department of Electrical & Computer Engineering, University of Cyprus, Nicosia, Cyprus

Sun. 3.2   13:15-13:30

Time-Frequency Analysis of Heart Rate Variability for Sleep and Wake Classification

Xi Long[1], Pedro Fonseca[1], Reinder Haakma[1], Ronald Aarts[1] and Jérôme Foussier[2]

[1]Philips Research and Eindhoven University of Technology, The Netherlands; [2]RWTH Aachen University, Germany)

Sun. 3.3   13:30-13:45

Partial Linear Transformation of Vectorcardiogram to 12 Lead Electrocardiogram Signals

Alireza Mehridehnavi[1,2], Niloofar Salehpour[1], Hossein Rabbani[1,2], Mohaddeseh Behjati[3]

[1]Department of Medical Physics and Engineering, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran; [2]Medical Image and Signal Processing Research Center, Isfahan University of Medical Sciences, Isfahan, Iran; [3]Department of Internal Medicine, Medical School, Isfahan University of Medical Sciences, Isfahan, Iran

Sun. 3.4   13:45-14:00

Posterior ECG: Producing a New Electrocardiogram Signal from Vectorcardiogram Using Partial Linear Transformation

Alireza Mehridehnavi[1,2], Niloofar Salehpour[1], Hossein Rabbani[1,2], Mohaddeseh Behjati[3]

[1]Department of Medical Physics and Engineering, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran; [2]Medical Image and Signal Processing Research Center, Isfahan University of Medical Sciences, Isfahan, Iran; [3]Department of Internal Medicine, Medical School, Isfahan University of Medical Sciences, Isfahan, Iran

Embedded Real-Time ECG Delineation Methods: a Comparative Evaluation

Ruben Braojos[1], Giovanni Ansaloni[1], David Atienza[1] and Francisco J. Rincón[2]

[1]École Polytechnique Fédérale de Lausanne, Switzerland; [2]Universidad Complutense de Madrid, Spain

IcyHeart: Highly integrated ultra-low-power SoC solution for unobtrusive and energy efficient wireless cardiac monitoring

Marios Milis[1], Kyriacos Michaelides[1], Anastasis Kounoudes[1], Frederic Giroud[2], Pierre-Francois Ruedi[2], Giovanni Ansaloni[3], David Atienza[3] and Frederic Masson[4]

[1]SignalGeneriX Ltd, Limassol, Cyprus; [2]Centre Suisse d'Electronique et de Microtechnique (CSEM), Neuchatel, Switzerland; [3]Embedded Systems Laboratory (ESL), Ecole Polytechnique Federale De Lausanne (EPFL), Lausanne, Switzerland; [4]DOLPHIN Integration, Grenoble, France

An Appendix to Embedded Designs of QRS Detectors

Stojanovic Radovan[1], Sasa Knezevc[1] and Dejan Karadaglic[2]

[1]Faculty of Electrical Engineering University of Montenegro, Podgorica, Montenegro, Dejan Karadaglić; [2]School of Electrical and Electronic Engineering, University of Manchester Manchester, United Kingdom

Coffee Break   14:45-15:15

Session: **Keynote Sun. 1**

Time & Place: **15:40-16:25 – Les Etoiles**

Chairperson: **Christos N. Schizas,** *Department of Computer Science, University of Cyprus*

Keynote Sun. 1   **15:40-16:25**

The Effects of Nicotine Exposure on the Complexity and the Genetic Patterns of Dopamine Neurons in VTA

Metin Akay

Founding Chair, John S Dunn Endowed Chair Professor, Department of Biomedical Engineering, Cullen College of Engineering, University of Houston, Houston, TX, USA

Tour to Athienou village and dinner   16:30-21:30

Session: **Intelligent Systems**

Time & Place: **8:30-10:00 - Les Etoiles**

Chairpersons: **Alexander Astaras,** *Department of Automation, Alexander Technological Educational Institute of Thessaloniki, Greece*

Kleanthis Neokleous, *Department of Computer Science, University of Cyprus, Nicosia, Cyprus*

Mon. 4.1   **08:30-08:45**

Development and Evaluation of an Open Source Wearable Navigation Aid for Visually Impaired Users (CYCLOPS)

Barbara Salonikidou[1], Dimitris Savvas[1], Georgios Diamantis and Alexander Astaras[1,3]

[1]Department of Automation, Alexander Technological Educational Institute of Thessaloniki, Greece; [2]Thessaloniki School for the Blind, Thessaloniki, Greece; [3]Laboratory of Medical Informatics, Medical School, Aristotle University of Thessaloniki, Greece

Mon. 4.2   **08:45-09:00**

Development of a Knowledge Base for smart screening of language disorders in primary care

María Luisa Martín Ruiz[1], Miguel Ángel Valero Duboy[1], Iván Pau de La Cruz[1], Mª Teresa Ferrando Lucas[2] and María Peñafiel Puerto[2]

[1]Departamento de Ingeniería y Arquitecturas Telemáticas, EUIT de Telecomunicación, Universidad Politécnica de Madrid, Madrid, Spain; [2]La Salle Campus, Universidad Autónoma de Madrid, Madrid, Spain

Mon. 4.3   **09:00-09:15**

A Gaussian Mixture Model to Detect Suction Events in Rotary Blood Pumps

Alexandros Tzallas[1], George Rigas[1], Evaggelos Karvounis[1], Markos Tsipouras, Yorgos Goletsis[1], Krzysztof Zielinski[2], Libera Fresiello[2,3], Dimitrios Fotiadis[1] and Maria Trivella[3]

[1]Biomedical Research Institute-FORTH, Ioannina, Greece; [2]Nalecz Institute of Biocybernetics and Biomedical Engineering, PAS, Warsaw, Poland; [3]Institute of Clinical Physiology, Section of Rome, CNR, Rome, Italy

Mon. 4.4   **09:15-09:30**

The Challenge of Modeling Decision Support Systems for Medical Problems using Fuzzy Cognitive Maps

Peter Groumpos

Laboratory for Automation and Robotics, Department of Electrical and Computer Engineering, University of Patras, Patra, Greece

Mon. 4.5   09:30-09:45

Region based Support Vector Machine Algorithm for Medical Diagnosis on Pima Indian Diabetes DataSet

Savvas Karatsiolis and Christos Schizas

Computer Science Department, University of Cyprus, Nicosia, Cyprus

Mon. 4.6   09:45-10:00

An Information Retrieval System for Expert and Consumer Users

Rena Perakis, Euripides Petrakis and Angelos Hliaoutakis

Department of Electronic and Computer Engineering, Technical University of Crete (TUC), Chania, Crete, Greece

Coffee Break   10:00-10:30

Session: **Biomolecular Sequence Analysis**

Time & Place: **8:30-10:00 - Minerva**

Chairpersons: **Simone Faro,** *Dipartimento di Matematica e Informatica, Università di Catania, Catania, Italy*

Vasilis J. Promponas, *Department of Biological Sciences, University of Cyprus, Cyprus*

Mon. 5.1 08:30-08:45

Predicting GPCR and Enzymes Function with a Global Approach Based on LCS

Luiz Romao[1] and Julio Cesar Nievola[2]

[1]Universidade da Região de Joinville, Departamento de Informática, Joinville - SC – Brasil; [2]Pontifícia Universidade Católica do Paraná, Pós-Graduação em Informática, Curitiba - PR – Brasil

Mon. 5.2 08:45-09:00

Annotation Guided Local Similarity Search in Multiple Sequences and its Application to Mitochondrial Genomes

Ruby Moritz, Matthias Bernt and Martin Middendorf

Parallel Computing and Complex Systems Group, Institute of Computer Science, University Leipzig, Germany

Mon. 5.3 09:00-09:15

Using protein-domain information for multiple sequence alignment

Layal Al-Ait, Eduardo Corel and Burkhard Morgenstern

University of Gottingen, Institute of Microbiology and Genetics, Department

Mon. 5.4 09:15-09:30

DNA Motifs Detection Algorithms in Long Sequences

Alin Voina, Petre Pop and Mircea Florin Vaida

Communications Department, Technical University Of Cluj Napoca

Mon. 5.5 09:30-09:45

Fast Searching in Biological Sequences Using Multiple Hash Functions

Simone Faro[1] and Thierry Lecroq[2]

[1]Dipartimento di Matematica e Informatica, Università di Catania, Catania, Italy; [2]Université de Rouen, Mont-Saint-Aignan Cedex, France

SVM-Based miRNA:miRNA* Duplex Prediction

Nestoras Karathanasis[1,3], Angelos Armen[2], Ioannis Tsamardinos[2,3] and Panayiota Poirazi[1]

[1]Institute of Molecular Biology and Biotechnology, Foundation for Research and Technology - Hellas FORTH, Heraklion, Greece; [2]Institute of Computer Science, Foundation for Research and Technology - Hellas FORTH, Heraklion, Greece; [3]Department of Biology, University of Crete; [4]Department of Computer Science, University of Crete

Coffee Break   10:00-10:30

Session:	**ECG and Biosignal Analysis**
Time & Place:	**8:30-10:00 - Diana**
Chairpersons:	**Christina Orphanidou,** *Institute of Biomedical Engineering, Univ. of Oxford, UK*
	Harris Papadopoulos, *Frederick University Cyprus, Limassol, Cyprus*

Mon. 6.1   **08:30-08:45**

Probabilistic Detection of Vital Sign Abnormality with Gaussian Process Regression

David Wong, David Clifton and Lionel Tarassenko

Institute of Biomedical Engineering, University of Oxford, Oxford, UK

Mon. 6.2   **08:45-09:00**

A Method for Assessing the Reliability of Heart Rates obtained from Ambulatory ECG

Christina Orphanidou[1], Timothy Bonnici[2], David Vallance[3], Alexander Darrell[1], Peter Charlton[4] and Lionel Tarassenko[1]

[1]*Institute of Biomedical Engineering , University of Oxford, UK;* [2]*Nuffield Department of Medicine, University of Oxford, UK;* [3]*Nuffield Department of Surgery, University of Oxford, UK;* [4]*Kings College London, King's Health Partners, UK*

Mon. 6.3   **09:00-09:15**

Optimal Anisotropic Lead Scaling of Multichannel ECG to Reduce Magnitude Signal Variability

Kai Noponen and Tapio Seppänen

Department of Computer Science and Engineering, University of Oulu, Oulu, Finland

Mon. 6.4   **09:15-09:30**

Combining Unobtrusive Electrocardiography and Ballistography for more Accurate Monitoring of Sleep

Antti Vehkaoja, Mikko Peltokangas, Jarmo Verho and Jukka Lekkala

Department of Automation Science and Engineering, Tampere University of Technology, Finland

Evaluation of T-wave alternans in comparison with ECG stress test and scintigraphic examination in patients with coronary artery disease

Dariusz Janusek[1], Michal Kania[1], Małgorzata Kobylecka[2], Rajmund Zaczek[3], Leszek Królicki[2], Grzegorz Opolski[3] and Roman Maniewski[1]

[1]Institute of Biocybernetic and Biomedical Engineering, Warsaw, Poland; [2]Nuclear Medicine Laboratory, Central Clinical Hospital of the Warsaw Medical University, Warsaw, Poland; [3]Cardiology Clinic, Central Clinical Hospital of the Warsaw Medical University, Warsaw, Poland

Calibrated Probabilistic Predictions for Biomedical Applications

Antonis Lambrou[1,2], Harris Papadopoulos[1,2,3] and Alexander Gammerman[2]

[1]Frederick Research Center, Nicosia, [2]Cyprus Computer Learning Research Centre, Royal Holloway, University of London, UK; [3]Department of Computer Science and Engineering, Frederick University, Limassol, Cyprus

Coffee Break 10:00-10:30

Session: **Keynote Mon. 1 & 2**

Time & Place: **10:30-12:00 – Les Etoiles**

Chairperson: **Dimitrios Fotiadis,** *Biomedical Research Institute-FORTH, Ioannina, Greece*

Keynote Mon. 1   **10:30-11:15**

From 6-Ps Medicine to Cardiovascular Health Informatics

Yuan-Ting Zhang

Director of Joint Research Center for BME at EE-CUHK, Hong Kong, China; and Director of the Key Lab for Health Informatics of Chinese Academy of Sciences (HICAS) at SIAT, Shenzhen, China

Keynote Mon. 2   **11:15-12:00**

Computer-Aided Interpretation of Vascular Images towards Valid Diagnosis and Risk Stratification of Atherosclerosis

Konstantina Nikita

Professor and Deputy Head of Faculty of Electrical Engineering at the N.T.U.A., Athens, Greece

Jointlly supported by the IEEE EMBS Cyprus Chapter

Session:	**Intervention and Therapeutic Systems**
Time & Place:	**12:00-13:30 – Les Etoiles**
Chairpersons:	**Eftychios Christoforou,** *KIOS Research Center, University of Cyprus, Cyprus*
	Sotos Voskarides, *Cyprus University of Technology (CUT), Cyprus*

Mon. 7.1   12:00-12:15

A software platform controlling an MRI guided focused ultrasound system

Christos Yiallouras[1,3], Marinos Ioakim[2], Alexis Alexandrou[2], Venediktos Hadjisavvas[1,3], Nicos Milonas[1,4] and Christakis Damianou[2,3]

[1]City University, London, UK; [2]Frederick University Cyprus, Limassol, Cyprus; [3]MEDSONIC, LTD, Limassol, Cyprus; [4]Frederick Institute of Technology, Limassol, Cyprus.

Mon. 7.2   12:15-12:30

Combining Reflector Focused and Phased Array Beamforming for Microwave Diagnosis and Therapy

Konstantinos Karathanasis[1] and Irene Karanasiou[2]

[1]Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus; [2]Department of Electrical and Computer Engineering, Institute of Communication and Computer Systems, National Technical University of Athens, Athens, Greece

Mon. 7.3   12:30-12:45

Development and initial testing of a prototype concentric tubes robot for surgical interventions

Costas Sophocleous[1], Eftychios Christoforou[2], Panayiotis Shiakolas[3], Ioannis Seimenis[4], Nikolaos Tsekos[5] and Charalambos Doumanidis[1]

[1]Department of Mechanical and Manufacturing Engineering, University of Cyprus, Nicosia, Cyprus; [2]KIOS Research Center, University of Cyprus, Nicosia, Cyprus; [3]Mechanical and Aerospace Engineering, The University of Texas at Arlington, Arlington, TX, USA; [4]Department of Medicine, Democritus University of Thrace, Alexandroupolis, Greece; [5]Department of Computer Science, University of Houston, Houston, TX, USA

Mon. 7.4   12:45-13:00

A predictive control approach and interactive GUI to enhance distal environment rendering during robotized tele-echograph

Pierre Vieyres[1], Soteris Avgousti[2], Marco Chiccoli[1], Juan Sandoval[1], Cyril Novales[1], Laurence Josserand[1], Aicha Fonte[1], Sotos Voskarides[2] and Takis Kasparis[2]

[1]Laboratory Prisme, University of Orleans, France; [2]Telemedicine research laboratory, Cyprus University of Technology (CUT), Limassol, Cyprus

Mon. 7.5   13:00-13:15

Design of a New Nanostructure for Theranostic Applications

Myria Angelidou and Costas Pitris

KIOS Research Center for Intelligent Systems and Networks, Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus

Mon. 7.6   13:15-13:30

Relating Postural Synergies to Low-D Muscular Activations: Towards Bio-inspired Control of Robotic Hands

Pantelis Katsiaris[1], Panagiotis Artemiadis[2] and Kostas Kyriakopoulos[1]

[1]Control Systems Lab, School of Mechanical Engineering, National Technical University of Athens; [2]ASU Human-Oriented Robotics and Control Lab, School for Engineering of Matter, Transport and Energy, Ira A. Fulton Schools of Engineering, Arizona State University

Lunch Break   13:30-14:30

Session:	**Biomolecular Structure Analysis**
Time & Place:	**12:00-13:15 – Minerva**
Chairpersons:	**Takenao Ohkawa,** *Graduate School of System Informatics, Kobe University, Japan*
	Nicolae Goga, *Molecular Dynamics Group, University of Groningen, Groningen, The Netherlands, and Politehnica University of Bucharest, Bucharest, Romania*

Mon. 8.1   **12:00-12:15**

GPU-SD and DPD Parallelization for Gromacs tools for molecular dynamics simulations

Nicolae Goga[1], Siewert Marrink[1], Herman Berendsen[1], Ruxandra Cioromela[2] and Florica Moldoveanu[2]

[1]*Molecular Dynamics Group University of Groningen Groningen, The Netherlands;* [2]*Department of Computer Science Politehnica University of Bucharest Bucharest, Romania*

Mon. 8.2   **12:15-12:30**

Binding site extraction by similar subgraphs mining from protein molecular surfaces

Natsumi Kurumatani, Hiroyuki Monji and Takenao Ohkawa

Graduate School of System Informatics, Kobe University, Nada, Kobe, Japan

Mon. 8.3   **12:30-12:45**

Genome-wide Search for Coaxial Helical Stacking Motifs

Kevin Byron, Jason Wang and Dongrong Wen

Bioinformatics Program and Department of Computer Science, New Jersey Institute of Technology, Newark, New Jersey, USA

Mon. 8.4   **12:45-13:00**

Enhancing the effectiveness of virtual screening by using the ChemBioServer: Application to the discovery of PI3Kα inhibitors

Paraskevi Gkeka, Emmanouil Athanasiadis, George Spyrou and Zoe Cournia

Biomedical Research Foundation of the Academy of Athens (BRFAA), Athens, Greece

Mon. 8.5   **13:00-13:15**

Sequence Features of Compositionally Biased Regions in Three Dimensional Protein Structures

Stella Tamana, Ioannis Kirmitzoglou and Vasilis Promponas

Bioinformatics Research Laboratory, Department of Biological Sciences, University of Cyprus, Nicosia, Cyprus

Lunch Break   13:30-14:30

Session:	**EEG and Biosignal Analysis**
Time & Place:	**12:00-13:30 – Diana**
Chairpersons:	**Nicoletta Nicolaou,** *Department of Electrical and Computer Engineering, University of Cyprus, Cyprus*
	Marios Neophytou, *Department of Computer Science, University of Cyprus, Cyprus*

Mon. 9.1   **12:00-12:15**

EEG-based automatic sleep-wake classification in humans using short and standard epoch lengths

Arnaud Brignol[1], Tarik Al-Ani[1] and Xavier Drouot[2]

[1]*Département Informatique-ISBS, ESIEE-Paris, France;* [2]*Service de Physiologie, Hopital Henri Mondor, France*

Mon. 9.2   **12:15-12:30**

What are the symbols of Alzheimer? A Permutation Entropy based symbolic analysis for the detection of early changes of the electroencephalographic complexity due to mild Alzheimer

Christos Frantzidis[1], Aristea Ladas[2], Maria Diamantoudi[2], Anastasia Semertzidou[1], Eirini Grigoriadou[1], Anthoula Tsolaki[3], Despoina Liapi[3], Anatoli Papadopoulou[2], Fotini Kounti[3], Ana Vivas[2], Magda Tsolaki[3], Costas Pappas[1] and Panagiotis Bamidis[1]

[1]*Laboratory of Medical Informatics, Medical School, Aristotle University (AUTH), Thessaloniki, Greece;* [2]*Psychology Department, City College International Faculty of the University of Sheffield & South East European Research Center Thessaloniki, Greece;* [3]*Greek Association of Alzheimer's Disease and Related Disorders, Thessaloniki, Greece*

Mon. 9.3   **12:30-12:45**

Temporal dynamics of EEG during anesthesia

Nicoletta Nicolaou, Andria Dionysiou and Julius Georgiou

Holistic Electronics Research Lab, Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus

Mon. 9.4   **12:45-13:00**

Exploration of Instantaneous Amplitude and Frequency Features for Epileptic Seizure Prediction

Ning Wang and Michael R. Lyu

Department of Computer Science and Engineering, The Chinese University of Hong Kong, Hong Kong

Prediction of the Parkinsonian subthalamic nucleus spike activity from local field potentials using nonlinear dynamic models

Kyriaki Kostoglou[1], Kostis Michmizos[2], Pantelis Stathis[3], Damianos Sakas[3], Konstantina Nikita[4] and Georgios Mitsis[1]

[1]Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus; [2]Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge MA; [3]Department of Neurosurgery, National and Kapodistrian University of Athens, Athens, Greece; [4]Department of Electrical and Computer Engineering, National Technical University of Athens, Athens, Greece

Investigation of network brain dynamics from EEG measurements in patients with epilepsy using graph-theoretic approaches

Manolis Christodoulakis[1], Maria Anastasiadou[1], Savvas Papacostas[2], Eleftherios Papathanasiou[2] and Georgios Mitsis[1]

[1]Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus; [2]Clinic B', The Cyprus Institute of Neurology and Genetics, Nicosia, Cyprus

Lunch Break   13:30-14:30

Session: **Sensing and Processing**

Time & Place: **14:30-16:00 – Les Etoiles**

Chairpersons: **Mehrdad Nourani,** *University of Texas at Dallas and Presbyterian Wound Care Clinic, TX, USA*

Andreas Spanias, *SenSIP Center and Industry Consortium, School of ECEE, Arizona State University, Tempe, AZ, USA*

Mon. 10.1 **14:30-14:45**

Continuous Plantar Pressure Modeling Using Sparse Sensors

Sarah Ostadabbas, Mehrdad Nourani and Matthew Pompeo

University of Texas at Dallas and Presbyterian Wound Care Clinic

Mon. 10.2 **14:45-15:00**

Development of a Reflectance Photoplethysmographic Sensor used for the Assessment of Perfusion of Free Jejunum Flaps: a case report

Tina Zaman[1], Panicos Kyriacou[1], Alla Belhaj[2], Richard Langford[2] and Hasu Patel[3]

[1]School of Engineering and Mathematical Sciences, City University London, London, UK; [2]Pain and Anaesthesia Research Centre; [3]Department of Plastics and Reconstructive Surgery, Barts and the London NHS Trust, UK, London, UK

Mon. 10.3 **15:00-15:15**

Antennas on metamaterial substrates as emitting components for THz biomedical imaging

Maria Koutsoupidou[1], Irene Karanasiou[2] and Nikolaos Uzunoglu[1]

[1]School of Electrical & Computer Engineering, National Technical University of Athens, Athens, Greece; [2]Institute of Communication and Computer Systems, National Technical University of Athens, Athens, Greece

Mon. 10.4 **15:15-15:30**

Biodegradable Encapsulation for Inductively Measured Resonance Circuit

Timo Salpavaara[1], Jukka Lekkala[1], Saiful Khan[2], Ville Ellä[2], Minna Kellomäki[2]

[1]Department of Automation Science and Engineering, Tampere University of Technology, Tampere, Finland and BioMediTech, Tampere, Finland; [2]Department of Biomedical Engineering, Tampere University of Technology, Tampere, Finland, and BioMediTech, Tampere, Finland

Mon. 10.5 **15:30-15:45**

Quantitative assessment of the pupillary photomotor response dynamics to tunable, narrow band stimuli

Vassilis Kavvadias and Costas Balas

Department of Electronic and Computer Engineering, Technical University of Crete, Chania, Greece

Point-of-Care Diagnosis of Urinary tract infection (UTI) Using Surface Enhanced Raman Spectroscopy (SERS)

Katerina Hadjigeorgiou[1], Evdokia Kastanos[2], Alexandros Kyriakides[1] and Costas Pitris[1]

[1]*KIOS Research Center for Intelligent Systems and Networks, Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus;* [2]*University of Nicosia, Department of Life and Health Sciences, Nicosia, Cyprus*

Coffee Break   16:00-16:30

Tour to down town Larnaca and dinner   16:30-22:00

Session: **Functional Genomics and Proteomics**

Time & Place: **14:30-16:00 – Minerva**

Chairpersons: **Christos Ouzounis,** *Centre for Research & Technology Hellas (CERTH), Thessalonica, Greece, and The Terrence Donnelly Centre for Cellular & Biomolecular Research (CCBR), University of Toronto, Canada*

Miguel Arturo Barreto-Sanz, *University of Applied Sciences of Western Switzerland (HEIG-VD), Vaud, Switzerland*

Mon. 11.1   **14:30-14:45**

Unsupervised analysis of leukemia and normal hematopoiesis by joint clustering of gene expression data

Liviu Badea

Bioinformatics Group, National Institute for Research in Informatics, Bucharest, Romania

Mon. 11.2   **14:45-15:00**

Microarray classification with hierarchical data representation and novel feature selection criteria

Mattia Bosio, Pau Bellot Pujalte, Philippe Salembier and Albert Oliveras-Vergés

Department of Signal Theory and Communications, Technical University of Catalonia UPC, Barcelona

Mon. 11.3   **15:00-15:15**

Experimental Analysis of Feature Selection Stability for High-Dimension and Low-Sample Size Gene Expression Classification Task

David Dernoncourt[1,2], Blaise Hanczar[3] and Jean-Daniel Zucker[1,2,4]

[1]Institut National de la Santé et de la Recherche Médicale, Nutriomique, Centre de Recherches des Cordeliers, Paris, France; [2]Université Pierre et Marie-Curie - Paris, Paris, France; [3]LIPADE, Université Paris Descartes, France; [4]Institut de Recherche pour le Développement, IRD, UMMISCO, France Nord, Bondy, France

Mon. 11.4   **15:15-15:30**

Evolving very compact fuzzy systems for gene expression data analysis

Miguel Arturo Barreto-Sanz, Alexandre Bujard and Carlos Andrés Peña-Reyes

University of Applied Sciences of Western Switzerland (HEIG-VD), Vaud, Switzerland

Mon. 11.5   **15:30-15:45**

Clustering Microarray Data using Fuzzy Clustering with Viewpoints

Katerina Karayianni[1], George Spyrou[2] and Konstantina Nikita[1]

[1]School of Electrical and Computer Engineering, National Technical University of Athens, Athens, Greece; [2]Biomedical Research Foundation, Academy of Athens, Athens, Greece

A Novel Ensemble Selection Method for Cancer Diagnosis Using Microarray Datasets

Mohammed Gaafar, Noha Yousri and Mohamed Ismail

Computer and System Engineering Department, Faculty of Engineering, Alexandria University

Coffee Break   16:00-16:30

Tour to down town Larnaca and dinner   16:30-22:00

Session: **Biosignal Processing and Analysis**

Time & Place: **14:30-16:00 – Diana**

Chairpersons: **Michalis Zervakis,** *Department of Electronics and Computer Engineering, Technical University of Crete, Chania, Greece*

Panikos Heracleous, *ATR, Intelligent Robotics and Communication Laboratories, Japan*

Mon. 12.1   **14:30-14:45**

Decomposition and Evaluation of activity in multiple ERP trials

Kostas Michalopoulos[1,2], Michalis Zervakis[1], Nikolaos Bourbakis[2], Panteleimon Giannakopoulos[3] and Marie-Pierre Deiber[4,5]

[1]*Department of Electronics and Computer Engineering, Technical University of Crete, Chania, Greece;* [2]*Wright State University –ATR Center, Dayton OH, 2AIIS Inc. Centreville OH and 3NIA, Baltimore, MD;* [3]*Division of General Psychiatry, Department of Psychiatry, University Hospitals of Geneva, Switzerland;* [4]*INSERM Unit 1039, Faculty of Medicine, La Tronche, France;* [5]*Clinical Neurophysiology and Neuroimaging Unit, Division of Neuropsychiatry, Department of Psychiatry, University Hospitals of Geneva, Switzerland*

Mon. 12.2   **14:45-15:00**

A brain-computer interface for chronic pain patients using epidural ECoG and visual feedback

Armin Walter[1], Georgios Naros[2], Alexander Roth[1], Wolfgang Rosenstiel[1], Alireza Gharabaghi[2] and Martin Bogdan[1,3]

[1]*Department of Computer Engineering, Wilhelm-Schickard-Institute, University of Tübingen, Germany;* [2]*Werner Reichardt Centre for Integrative Neuroscience and Department of Neurosurgery, University Hospital, University of Tübingen, Germany;* [3]*Department of Computer Engineering, Faculty of Mathematics and Computer Science, University of Leipzig, Germany*

Mon. 12.3   **15:00-15:15**

Lung Capacity Estimation Through Acoustic Signal of Breath

Ahmad Abushakra and Miad Faezipour

Department of Computer Science & Engineering, University of Bridgeport, Bridgeport

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Mon. 12.4   **15:15-15:30**

The Role of the Lombard Reflex in Parkinson's Disease

Panikos Heracleous[1], Jani Even[1], Carlos Ishi[1], Masaki Kondo[2], Kyoko Takanohara[3], Takahiro Miyashita[1] and Norihiro Hagita[1]

[1]*ATR, Intelligent Robotics and Communication Laboratories, Japan;* [2]*Department of Neurology, Kyoto Prefectural University of Medicine, Japan;* [3]*Rehabilitation Unit, Kyoto Prefectural University of Medicine, Japan*

Mon. 12.5   15:30-15:45

Emotion Classification Based on Forehead Biosignals using Support Vector Machines in Music Listening

Mohsen Naji[1], Mohammad Firoozabadi[2] and Parviz Azadfallah[3]

[1]Department of Biomedical Engineering, Islamic Azad University, Science and Research branch, Tehran, Iran; [2]Department of Medical Physics, Tarbiat Modares University, Tehran, Iran; [3]Department of Psychology, Tarbiat Modares University, Tehran, Iran

Mon. 12.6   15:45-16:00

Automated tumor segmentation using kernel sparse representations

Jayaraman J. Thiagarajan, Deepta Rajan, Karthikeyan Natesan Ramamurthy, David Frakes and Andreas Spanias

SenSIP Center and Industry Consortium, School of ECEE, Arizona State University, Tempe, AZ, USA

Coffee Break   16:00-16:30

Tour to down town Larnaca and dinner   16:30-22:00

Session: Special Session 1[1] – Frameworks for large-scale data sharing, semantics and related sociotechnical issues

Time & Place: 8:30-10:00 - Les Etoiles

Chairpersons: **Vaggelis Sakkalis**, *Computer Medicine Laboratory, Institute of Computer Science, FORTH, Heraklion, Crete, Greece*
Athos Antoniades, *University of Cyprus, Cyprus*

Tue. SS. 13.1   08:30-08:45

Data Integration and Feature Selection in High-volume Molecular and Imaging Datasets

Konstantinos Moutselos[1], Ilias Maglogiannis[1] and Aristotelis Chatziioannou[2]

[1]Konstantinos Moutselos, Ilias Maglogiannis Department of Computer Science and Biomedical Informatics University of Central Greece, Lamia, Greece; [2]Institute of Biological Research and Biotechnology National Hellenic Research Foundation Athens, Greece

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Tue. SS. 13.2   08:45-09:00

Identifying the Semantics of Eligibility Criteria of Clinical Trials based on relevant Medical Ontologies

Anca Bucur[1], Jasper van Leeuwen[1], David Perez Del Rey[2], Brecht Claerhout[3], Kristof de Schepper[3] and Raul Alonso Calvo[2]

[1]Healthcare Information Management Philips Research Europe, Eindhoven, the Netherlands; [2]Grupo de Informática Biomédica, Department Inteligencia Artificial, Facultad de Informática, Universidad Politécnica de Madrid, Boadilla del Monte, Madrid, Spain; [3]Custodix NV Kortrijksesteenweg 214b3, Sint-Martens-Latem, Belgium

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Tue. SS. 13.3   09:00-09:15

A technical infrastructure to support Personalized Medicine

Stelios Sfakianakis[1], Manolis Tsiknakis[1], Konstantinos Marias[1] and Norbert Graf[2]

[1]Computer Medicine Laboratory, Institute of Computer Science, FORTH, Heraklion, Crete, Greece; [2]Department for Ped, Oncology / Hematology University Hospital Homburg, Homburg, Germany

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Tue. 13.4   09:15-09:30

Legal and Ethical Issues in Integrating Databases for Translational Medical Research within the EU

Iheanyi Nwankwo, Stefanie Haenold and Nikolaus Forgó

Institute for Legal Informatics, Leibniz Universität Hannover

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[1] See Special Session description: *Computational Solutions to Large-scale Data Management and Analysis in Translational and Personalized Medicine,* page xxix.

Tue. SS. 13.5   **09:30-09:45**

e-Prolipsis: A web based risk estimation platform to support and register breast cancer diagnosis in Greece

Alexandros Dimopoulos, John Lakoumentas, Argyro Antaraki, Antonios Frigas, Emmanouil Ikonomakis, Marinos Sampson, Anastasios Tagaris, Aikaterini Liakou, Emmanouil Athanasiadis, George Spyrou and Panos Ligomenides

Biomedical Research Foundation of the Academy of Athens (BRFAA), Athens, Greece

Tue. SS. 13.6   **09:45-10:00**

A Workflow System for Virtual Screening in Cancer Chemoprevention

Christos Kannas[1], Kleo Achilleos[1], Zinonas Antoniou[1], Christos Nicolaou[1], Constantinos Pattichis[1], Ioanna Kalvari[2], Ioannis Kirmitzoglou[2] and Vasilis Promponas[2]

[1]Department of Computer Science, University of Cyprus, Nicosia, Cyprus; [2]Department of Biological Sciences, University of Cyprus, Nicosia, Cyprus

Coffee Break   10:00-10:30

Session: **Systems Biology**

Time & Place: **8:30-10:00 - Minerva**

Chairpersons: **Miguel Andrade,** *Computational Biology and Data Mining group, Max Delbrück Center for Molecular Medicine, Berlin, Germany Affiliate investigator at the Ottawa Hospital Research Institute, Canada*

Stefano Schivo, *Formal Methods and Tools, Faculty of EEMCS, University of Twente, Enschede, The Netherlands*

Tue. 14.1   **08:30-08:45**

Modelling biological pathway dynamics with Timed Automata

Stefano Schivo[1], Jetse Scholma[2], Brend Wanders[3], Ricardo A. Urquidi Camacho[2], Paul E. van der Vet[3], Marcel Karperien[2], Rom Langerak[1], Jaco van de Pol[1] and Janine N. Post[2]

[1]*Formal Methods and Tools, Faculty of EEMCS, University of Twente, Enschede, The Netherlands;* [2]*Developmental BioEngineering, MIRA Institute for Biomedical Technology and Technical Medicine, University of Twente, Enschede, The Netherlands;* [3]*Human Media Interaction, Faculty of EEMCS, University of Twente, Enschede, The Netherlands*

Tue. 14.2   **08:45-09:00**

Mathematical Modeling of the Interactions between Cellular Programs in Response to Oncogene Inactivation

Chinyere Nwabugwu[1,3], Kavya Rakhra[2], Dean Felsher[2], David Paik[3]

[1]*Department of Electrical Engineering, Stanford University School of Medicine, Stanford, CA USA;* [2]*Department of Medicine, Stanford University School of Medicine, Stanford, CA USA;* [3]*Department of Radiology, Stanford University School of Medicine, Stanford, CA USA*

Tue. 14.3   **09:00-09:15**

Biological Interaction Networks Based on Sparse Temporal Expansion of Graphical Models

Kalliopi Kalantzaki, Ekaterini Bei, Minos Garofalakis and Michalis Zervakis

Department of Electronic and Computer Engineering, Technical University of Crete, Chania, Greece,

Tue. 14.4   **09:15-09:30**

Investigating Survival Prognosis of Glioblastoma Using Evolutional Properties of Gene Networks

Alex Upton and Theodoros Arvanitis

School of Electronic, Electrical and Computer Engineering, University of Birmingham, Birmingham, England, UK

A Graph Theoretic Mathematical Model for Alzheimer's disease (using a systems biology approach)

Christina Rose Kyrtsos[1] and John Baras[2]

[1]*Institute for Systems Research University of Maryland College Park, MD, US;* [2]*Institute for Systems Research & Department of Electrical Engineering University of Maryland College Park, MD, US*

A distributed software package for global sensitivity analysis of biological models

Quang Tung Thai, Seokjong Yu and Youngseong Cho

Department of Supercomputing, Korea Institute of Science and Technology Information (KISTI), Daejeon, Korea South

Coffee Break   10:00-10:30

Session: **Segmentation and Texture Analysis**

Time & Place: **8:30-10:00 - Diana**

Chairpersons: **Styliani Petroudi,** *Department of Computer Science, University of Cyprus, Cyprus*

                     Efthyvoulos Kyriacou, *Department of Computer Science and Engineering, Frederick University, Limassol, Cyprus*

Tue. 15.1   **08:30-08:45**

Application of fast segmentation method for knee contour delineation

Antonio Pinti[1,4], Raphael Coursier[2], Eric Watelain[3] and Hechmi Toumi[1]

[1]*EA 4708, I3MTO, CHRO - 1 rue Porte Madeleine, Orléans, France; [2]Groupe Hospitalier de l'Institut Catholique de Lille, Lomme, France; [3]LAMIH – UMR 8201 CNRS, Université de Valenciennes, Valenciennes, France; [4]ENSIAME – UVHC, Université de Valenciennes, Valenciennes, France*

Tue. 15.2   **08:45-09:00**

Automatic Localization of the Optic Disc in Retinal Fundus Images Using Multiple Features

Touseef Ahmad Qureshi[1], Hassan Amin[2], Mahfooz Hussain[3], Rashid Jalal Qureshi[4], Bashir Al-Diri[1]

[1]*University of Lincoln, Lincoln, UK; [2]NUCES, KPK, Pakistan; [3]LadyReading Hospital, KPK, Pakistan; [4]University of Debrecen, Hungary*

Tue. 15.3   **09:00-09:15**

Interactive binary active contours for prostate contour delineation

Derraz Foued[1,3], Abdelmalik Taleb-Ahmed[2], Laurent Peyrodie[3] and Gerard Forzy[1,4]

[1]*Faculté Libre de Médicine, Institut Catholique de Lille, France; [2]LAMIH UMR CNRS 8201, Le Mont Houy, Valenciennes, France; [3]HEI, LAGIS UMR CNRS 3304, Lille, France*

Tue. 15.4   **09:15-09:30**

Video Segmentation of the Common Carotid Artery Intima Media Complex

Christos Loizou[1,2], Takis Kasparis[2], Pavlos Papakyriakou[2], Lakis Christodoulou[2], Marios Pantziaris[3] and Constantinos Pattichis[4]

[1]*Department of Computer Science, Intercollege, Limassol, Cyprus; [2]Department of Electrical Engineering, Computer Engineering & Informatics, Cyprus University of Technology, Limassol, Cyprus; [3]Institute of Neurology and Genetics, Nicosia; [4]Department of Computer Science, University of Cyprus, Nicosia, Cyprus*

Measurement of Motion of Carotid Bifurcation Plaques

Hamed Nasrabadi[1], Marios Pattichis[1], Perry Fisher[2], Andrew Nicolaides[3], Maura Griffin[3], Gregory Makris[3], Efthyvoulos Kyriacou[4] and Constantinos Pattichis[5]

[1]Department of Electrical and Computer Engineering, The University of New Mexico, Albuquerque, NM, USA; [2]Sophie Davis School of Biomedical Education, Mack Lipkin Fellow 2012, Astoria, NY, USA; [3]Vascular Screening and Diagnostic Centre, London, U.K; [4]Department of Computer Science and Engineering, Frederick University, Limassol, Cyprus; [5]Department of Computer Science, University of Cyprus, Nicosia, Cyprus

An MPEG-7 Image Retrieval System of Atherosclerotic Carotid Plaque Images

Gianna Ioakim[1], Efthyvoulos Kyriacou[2], Anastasios Sofocleous[1], Christodoulos Christodoulou[1] and Constantinos Pattichis[1]

[1]Department. of Computer Science, University of Cyprus, Nicosia; [2]Department of Computer Science and Engineering, Frederick University, Limassol, Cyprus

Coffee Break   10:00-10:30

Session:	**Keynote Tue. 1 & 2**
Time & Place:	**10:30-12:00 – Les Etoiles**
Chairperson:	**Vasilis J. Promponas,** *Dep. of Biological Sciences, University of Cyprus, Cyprus*

Keynote Tue. 1   **10:30-11:15**

Turning data into predictions of gene and protein function

Miguel Andrade

Group Leader of the Computational Biology and Data Mining group, Max Delbrück Center for Molecular Medicine, Berlin, Germany Affiliate investigator at the Ottawa Hospital Research Institute, Canada

Keynote Tue. 2   **11:15-12:00**

From reading to writing (and rewriting) the code of life: the future of biology – scientific, ethical, legal, civil and social issues

Christos Ouzounis

Principal Investigator at the Centre for Research & Technology Hellas (CERTH), Thessalonica, Greece, and a visiting Professor at The Terrence Donnelly Centre for Cellular & Biomolecular Research (CCBR), University of Toronto, Canada

Session: **Special Session 2[2] – Algorithms for Marker Selection, Diagnosis, Prognosis and Patient Empowerment**

Time & Place: **12:00-13:15 – Les Etoiles**

Chairpersons: **Anca Bucur,** *Healthcare Information Management Philips Research Europe, Eindhoven, the Netherlands*

Konstantinos Marias, *Computational Medicine Laboratory, FORTH-ICS Heraklion, Crete, Greece*

Tue. SS. 16.1   **12:00-12:15**

Linked2Safety: A secure linked data medical information space for semantically-interconnecting EHRs advancing patients' safety in medical research

Athos Antoniades[1], Christos Georgousopoulos[2], Nikolaus Forgó[3], Aristos Aristodimou[1], Federica Tozzi[4], Panagiotis Hasapis[2], Konstantinos Perakis[5], Thanasis Bouras[5], Dimitris Alexandrou[5], Eleni Kamateri[6], Eleni Panopoulou[6], Konstantinos Tarabanis[6] and Constantinos Pattichis[1]

[1]University of Cyprus, Nicosia, Cyprus; [2]INTRASOFT International, Brussels, Luxembourg; [3]Gottfried Wilhelm Leibniz Universitat Hannover, Hannover, Germany; [4]School of Medicine, University of North Carolina, Chapel Hill, NC, USA; [5]Ubitech Ltd., Athens, Greece; [6]The Centre for Research and Technology Hellas, Thessaloniki, Greece

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Tue. SS. 16.2   **12:15-12:30**

Influence of Algorithmic Parameters on Marker Selection in Genomic Datasets

Theodora Vigdideli[1], Ekaterini Bei[1], Michalis Zervakis[1] and Dimitrios Kafetzopoulos[2]

[1]Department of Electronic and Computer Engineering, Technical University of Crete, Chania, Crete, Greece; [2]Institute of Molecular Biology and Biotechnology, Foundation of Research and Technology Hellas (FORTH), Heraklion Crete, Greece

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Tue. SS. 16.3   **12:30-12:45**

Design Rules for Cancer Nanomedicines

Triantafyllos Stylianopoulos[1], Konstantinos Soteriou[1], Dai Fukumura[2] and Rakesh Jain[2]

[1]Department of Mechanical and Manufacturing Engineering, University of Cyprus, Nicosia, Cyprus; [2]Edwin L. Steele laboratory, Department of Radiation Oncology, Massachusetts General Hospital and Harvard Medical School, Boston, USA

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[2] See Special Session description: *Computational Solutions to Large-scale Data Management and Analysis in Translational and Personalized Medicine,* page xxix.

IEmS: A collaborative Environment for Patient Empowerment

Haridimos Kondylakis[1], Lefteris Koumakis[1], Eirini Genitsaridi[1], Manolis Tsiknakis[1,2], Konstantinos Marias[1], Gabriella Pravettoni[3], Alessandra Gorini[4] and Ketti Mazzocco[3]

[1]*Computational Medicine Laboratory, FORTH-ICS Heraklio, Crete, Greece;* [2]*Department of Applied Informatics and Multimedia, Technological Educational Institute, Heraklion, Crete;* [3]*Centro Interdipartimentale di Ricerca e Intervento sui, Processi Decisionali (IRIDe) Università degli Studi di Milano;* [4]*Department of Decision Sciences, Bocconi University, Milan and eCancer – Cancer Intelligence Limited*

Security Issues in research projects with patient`s medical data

Nikolaus Forgó, Magdalena Goralczyk and Constantin Graf von Rex

Institute for Legal Informatics, LUH Hannover, Germany

Lunch Break   13:30-14:30

Session: **Algorithms and Systems in Bioinformatics**

Time & Place: **12:00-13:30 – Minerva**

Chairpersons: **Mesude Bicak,** *NERC Centre for Ecology and Hydrology, Wallingford, United Kingdom*

Vasilis J. Promponas, Dep. of Biological Sciences, University of Cyprus, Cyprus

Tue. 17.1   **12:00-12:15**

Clustering Subjects in Genetic Studies with Self Organizing Maps

Aristos Aristodimou, Athos Antoniades, Constantinos Pattichis

Department of Computer Science, University of Cyprus, Nicosia, Cyprus

Tue. 17.2   **12:15-12:30**

Open Source Workflow Systems in Life Sciences Informatics

Kleo Achilleos[1], Christos Kannas[1], Christodoulos Nicolaou[1], Constantinos Pattichis[1], Vasilis Promponas[2]

[1]Department of Computer Science, University of Cyprus, Nicosia, Cyprus; [2]Department of Biological Sciences, University of Cyprus, Nicosia, Cyprus

Tue. 17.3   **12:30-12:45**

Opportunities from the Use of FPGAs as Platforms for Bioinformatics Algorithms

Grigorios Chrysos[1], Euripides Sotiriades[1], Christos Rousopoulos[1], Apostolos Dollas[1], Agathoklis Papadopoulos[2], Ioannis Kirmitzoglou[2], Vasilis Promponas[2], Theocharis Theocharides[2], George Petihakis[3], Jacques Lagnel[3], Panagiotis Vavylis[3], George Kotoulas[3]

[1]Technical University of Crete, Chania, Greece; [2]University of Cyprus, Nicosia, Cyprus; [3]Hellenic Center for Marine Research, Heraklion, Greece

Tue. 17.4   **12:45-13:00**

A New Iterative Graph Based Clustering Method

Erion - Vasilis Pikoulis and Emmanouil Psarakis

Department of Computer Engineering and Informatics, University of Patras, 26500 Rio-Patras, Greece

sCoIn: A Scoring algorithm based on COmplex INteractions for reverse engineering regulatory networks

Vijender Chaitankar[1], Preetam Ghosh[1], Mohamed Elasri[2], Kurt Gust[3] and Edward Perkins[3]

[1]*Department of Computer Science, Virginia Commonwealth University, Richmond, VA, USA;* [2]*Dept. of Biological Sciences, University of Southern Mississippi, Hattiesburg, MS, USA; Environmental Laboratory, E.R.D.C, U.S. Army, Vicksburg, MS, USA*

Bio-Linux as a Tool for Bioinformatics Training

Timothy Booth[1], Mesude Bicak[1], Hyun Soon Gweon[1], Dawn Field[1], Enis Afgan[2]

[1]*Molecular Evolution and Bioinformatics Group, NERC Centre for Ecology and Hydrology, Wallingford, United Kingdom;* [2]*Center for Informatics and Computing, Ruđer Bošković Institute, Zagreb, Croatia*

Lunch Break   13:30-14:30

Session:	Image Registration and Microscopy Imaging
Time & Place:	12:00-13:30 – Diana
Chairpersons:	Christos Loizou, *Department of Computer Science, Intercollege, Limassol, Cyprus*
	Takis Kasparis, *Department of Electrical Engineering, Computer Engineering & Informatics, Cyprus University of Technology, Limassol, Cyprus*

Tue. 18.1   12:00-12:15

Intraoperative Registration of Preoperative 4D Cardiac Anatomy with real-time MR images

Xifeng Gao[1], Nikhil Navkar[1,3], Dipan Shah[2], Nikolaos Tsekos[3] and Zhigang Deng[1]

[1]Computer Graphics and Interactive Media Lab, Department of Computer Science, University of Houston, Houston, USA; [2]Methodist DeBakey Heart & Vascular Center, Houston, USA; [3]Medical Robotics Lab, Department of Computer Science, University of Houston, Houston, USA

Tue. 18.2   12:15-12:30

Image Guided Mechanically Scanned and Co-registered Localized Optical and MR Spectroscopies

Ahmet Sonmez[1], Andrew Webb[2] and Nikolaos Tsekos[1]

[1]Medical Robotics Lab, Department of Computer Science, University of Houston, Houston, USA; [2]Department of Radiology, Leiden University Medical Center, Leiden, Netherlands

Tue. 18.3   12:30-12:45

Detection and registration of vessels of Fundus and OCT images using curvelet analysis

Marzieh Golabbakhsh, Hossein Rabbani and Mahdad Esmaeili

Biomedical Engineering Department, Medical Image and Signal Processing Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Tue. 18.4   12:45-13:00

Lateral resolution improvement in Optical Coherence Tomography (OCT) images

Evgenia Bousi and Costas Pitris

KIOS Research Center, Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus

Tue. 18.5   13:00-13:15

Atomic Force Microscopy Surface Nanocharacterization of UV-Irradiated Collagen Thin Films

Andreas Stylianou, Dido Yova and Konstantinos Politopoulos

Biomedical Optics & Applied Biophysics Lab, School ECE, Division of Electromagnetics, Electrooptics & Electronic Materials, National Technical University of Athens, Athens, Greece

Mechanical Properties of Collagen Fibrils on Thin Films by Atomic Force Microscopy Nanoindentation

Stylianos-Vasileios Kontomaris, Andreas Stylianou, Dido Yova and Konstantinos Politopoulos

Biomedical Optics & Applied Biophysics Lab, School ECE Devision of Electromagnetics, Electrooptics & Electronic Materials, National Technical University of Athens, Athens, Greece

Lunch Break   13:30-14:30

Session: Special Session 3[3] – Modeling and Analysis Frameworks

Time & Place: 14:30-16:00 – Les Etoiles

Chairpersons: Norbert Graf, *University of the Saarland, Department of Pediatric Oncology and Hematology, Homburg, Germany*

Georgios Mitsis, *Department of Electrical and Computer Engineering, University of Cyprus, Cyprus*

Tue. SS. 19.1   14:30-14:45

Model-based control of tumor progression

Marios Hadjiandreou and Georgios Mitsis

Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus

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Tue. SS. 19.2   14:45-15:00

An innovative mathematical analysis of routine MRI scans in patients with glioblastoma using DoctorEye

Jonathan Zepp[1], Norbert Graf[1], Ioannis Karatzanis[2], Holger Stenzhorn[1], Georgios Manikis[2], Vangelis Sakkalis[2], Wolfgang Reith[3], Georgios Stamatakos[4], Konstantinos Marias[2]

[1]University of the Saarland, Department of Pediatric Oncology and Hematology, D-66421 Homburg, Germany; [2]Institute of Computer Science at FORTH, Heraklion, Crete, Greece; [3]University of the Saarland, Department of Neuroradiology, Homburg, Germany; [4]Institute of Communications and Computer Systems, National Technical University of Athens, In Silico Oncology Group, Zografos, Greece

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Tue. SS. 19.3   15:00-15:15

The effects of near optimal growth solutions in genome-scale human cancer metabolic model

Eleftheria Tzamali, Vangelis Sakkalis and Konstantinos Marias

Institute of Computer Science, Foundation for Research and Technology-Hellas (FORTH), Heraklion, Crete, Greece

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Tue. SS. 19.4   15:15-15:30

Analysis of DNA Methylation Epidemiological Data through a Generic Composite Statistical Framework

Ioannis Valavanis, Emmanouil Sifakis, Panagiotis Georgiadis, Sotirios Kyrtopoulos and Aristotelis Chatziioannou

Institute of Biology, Medicinal Chemistry & Biotechnology, National Hellenic Research Foundation, Athens, Greece

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[3] See Special Session description: *Computational Solutions to Large-scale Data Management and Analysis in Translational and Personalized Medicine,* page xxix.

Strengths and Weaknesses of the European Concept of Informed Consent: Theoretical Issues and Practical Examples

Nikolaus Forgó, Magdalena Goralczyk and Constantin Graf von Rex

Institute for Legal Informatics, LUH Hannover, Germany

The effects of applying cell-suppression and perturbation to aggregated genetic data

Athos Antoniades[1], John Keane[2], Aristos Aristodimou[1], Christa Philipou[1], Andreas Constantinou[1], Christos Georgousopoulos[3], Federica Tozzi[4], Kyriacos Kyriacou[5], Andreas Hadjisavvas[5], Maria Loizidou[5], Christiana Demetriou[5] and Constantinos Pattichis[1]

[1]University of Cyprus, Nicosia, Cyprus; [2]University of Manchester, Manchester, United Kingdom; [3]INTRASOFT International, Luxembourg, Brussels; [4]School of Medicine, University of North Carolina, Chapel Hill, NC, USA; [5]Cyprus Institute of Neurology and Genetics, Nicosia, Cyprus

Coffee Break 16:00-16:30

Session: **Biological Systems and Models**

Time & Place: **14:30-16:00 – Minerva**

Chairpersons: **Peter Groumpos,** *Dep. of Electrical and Computer Engineering, University of Patras, Greece*

Panagiotis Bamidis *School of Medicine, Aristotle University of Thessaloniki, Greece*

Tue. 20.1 **14:30-14:45**

Modeling the Activation of a Non-Homogenous Nerve Fiber by Magnetic Stimulation

Mihaela Cretu, Laura Darabant and Radu Ciupa

Technical University of Cluj-Napoca/Electrotechnics Department, Cluj-Napoca, Romania

Tue. 20.2 **14:45-15:00**

Modeling of the manuo-ocular coordination during object guiding through a path

Saulius Niauronis, Raimondas Zemblys and Vincas Laurutis

Biomedical engineering center, Siauliai University, Siauliai, Lithuania

Tue. 20.3 **15:00-15:15**

Studying the blood plasma flow past a red blood cell, with the mathematical method of Kelvin's transformation

Maria Hadjinicolaou and Eleftherios Protopapas

School of Science and Technology, Hellenic Open University, Patras, Greece

Tue. 20.4 **15:15-15:30**

Towards a Graph Theoretical Approach to Study Gender Lateralization Effect in Mathematical Thinking

Manousos Klados[1], Chrysa Lithari[1], Ioannis Antoniou[2], Anastasia Semertzidou[1], Charalampos Bratsas[2], Sifis Micheloyannis[3] and Panagiotis Bamidis[1]

[1]Lab of Medical Informatics, School of Medicine, Aristotle University of Thessaloniki, Greece; [2]Department of Mathematics, Aristotle University of Thessaloniki, Greece; [3]School of Medicine, University of Crete, Greece

Tue. 20.5 **15:30-15:45**

Linear Dynamic Modelling and Bayesian Forecasting of Tumor Evolution

Achilleas Achilleos[1], Charalambos Loizides[1], Triantafyllos Stylianopoulos[2] and Georgios Mitsis[1]

[1]KIOS Research Center for Intelligent Systems and Networks, Department of Electrical and Computer Engineering, University of Cyprus, Nicosia, Cyprus; [2]Department of Mechanical and Manufacturing Engineering, University of Cyprus, Nicosia, Cyprus

A Theoretical Mathematical Modeling of Parkinson's Disease Using Fuzzy Cognitive Maps

Peter Groumpos and Antigoni Anninou

Laboratory for Automation and Robotics, Department of Electrical and Computer Engineering, University of Patras, Patra, Greece

Coffee Break   16:00-16:30

Session: Image Analysis 1

Time & Place: 14:30-16:00 – Diana

Chairpersons: Yang Yang, *NUS Graduate School for Integrative Sciences and Engineering, National University of Singapore & Faculty of Dentistry, National University of Singapore, Singapore*

Costas Pitris, *Dep. of Electrical and Computer Engineering, University of Cyprus, Cyprus*

Tue. 21.1   14:30-14:45

Image-based Estimation of Biomechanical Relationship between Masticatory Muscle Activities and Mandibular Movement

Yang Yang[1,2], Kelvin Foong Weng Chiong[1,2], Ong Sim Heng[1,3,4], Yagi Masakazu[5] and Takada Kenji[2,6]

[1]NUS Graduate School for Integrative Sciences and Engineering, National University of Singapore; [2]Faculty of Dentistry, National University of Singapore, Singapore; [3]Department of Electrical and Computer Engineering, National University of Singapore, Singapore; [4]Department of Bioengineering, National University of Singapore, Singapore; [5]The Center for Advance Medical Engineering and Informatics, Osaka University, Osaka, Japan; [6]Department of Orthodontics and Dentofacial Orthopedics, Graduate School of Dentistry, Osaka University, Osaka, Japan

Tue. 21.2   14:45-15:00

HEp-2 Cells Classification via fusion of morphological and textural features

Ilias Theodorakopoulos, Dimitris Kastaniotis, George Economou and Spiros Fotopoulos

Electronics Laboratory, University of Patras, Patras, Greece

Tue. 21.3   15:00-15:15

Monitoring circulating cancer cells by multichannel in vivo flow cytometry

Costas Pitsillides[1], Konstantinos Kapnisis[1], Andreas Anayiotos[1], Marianna Prokopi[2] and Christina Kousparou[2]

[1]Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology, Nicosia, Cyprus; [2]Trojantec Ltd, Bank of Cyprus Oncology Center, Nicosia, Cyprus

Tue. 21.4   15:15-15:30

An Image-based Method for Quantification of Lateral Pterygoid Muscle Deformation

Yang Yang[1,2], Kelvin Foong Weng Chiong[1,2], Ong Sim Heng[1,3,4], Yagi Masakazu[5] and Takada Kenji[2,6]

[1]NUS Graduate School for Integrative Sciences and Engineering, National University of Singapore; [2]Faculty of Dentistry, National University of Singapore, Singapore; [3]Department of Electrical and Computer Engineering, National University of Singapore, Singapore; [4]Department of Bioengineering, National University of Singapore, Singapore; [5]The Center for Advance Medical Engineering and Informatics, Osaka University, Osaka, Japan; [6]Department of Orthodontics and Dentofacial Orthopedics, Graduate School of Dentistry, Osaka University, Osaka, Japan

Tue. 21.5   15:30-15:45

Adaptive Nonlinear Probabilistic Filter for Positron Emission Tomography

Musa Alrefaya and Hichem Sahli

Department of Electronics and Informatics, Vrije Universiteit Brussel, Brussels, Blegium

Tue. 21.6   15:45-16:00

Evaluation of Wound Healing Process Based on Texture Analysis

Christos Loizou[1,2], Takis Kasparis[2], Orthodoxia Mitsi[2] and Michalis Poliviou[3]

[1]Department of Computer Science, Intercollege, Limassol, Cyprus, [2]Department of Electrical Engineering, Computer Engineering & Informatics, Cyprus University of Technology, Limassol, Cyprus; [3]Poliviou Clinic, Limassol, Cyprus

Coffee Break   16:00-16:30

Session: **Linked2Safety SIG workshop**[4]

Time & Place: **16:00-18:00 – Les Etoiles**

Chairpersons: **Ann Gledson,** *University of Manchester, UK*
                                Mirto Ioannidi, *ZEINCRO, Greece*

Tue. 22.1   **16:00-16:20**

Linked2Safety overview: a next-generation, secure linked data medical information space for semantically interconnecting electronic health records and clinical trials systems

Christos Georgousopoulos

Intrasoft, Greece

Tue. 22.2   **16:20-16:50**

Linked2Safety architecture

Panagiotis Gouvas

UBITECH, Greece

Tue. 22.3   **16:50-17:00**

Linked2Safety surveys on current practice in health data access

Thomai Stavropoulou

ZEINCRO, Greece

Tue. 22.4   **17:00-17:45**

Round table discussion/feedback on the Linked2Safety data infrastructure

Athos Antoniades

University of Cyprus, Cyprus

Tue. 22.5   **17:45-18:00**

Consolidating ideas, next steps and potential collaboration

Ann Gledson

University of Manchester, UK

Closing Ceremony – Student Paper Competition Awards   18:00

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[4] See workshop description: *Linked2Safety Clinical Research and Patients Safety Special Interest Group Workshop,* page xxxi.

Session: **Image Analysis 2**

Time & Place: **16:00-17:30 – Diana**

Chairpersons: **Christakis Damianou,** *Frederick University, Cyprus & MEDSONIC, LTD, Cyprus*

Andreas Panayides, *Department of Computer Science, University of Cyprus, Cyprus*

Tue. 23.1   **16:00-16:15**

IVUS-based Characterization of Atherosclerotic Plaques using Feature Selection and SVM classification

Vasilis Giannoglou, Dimitris Stavrakoudis and John Theocharis

Department of Electrical and Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Tue. 23.2   **16:15-16:30**

Despeckling in Ultrasound Videos of the Common Carotid Artery

Christos Loizou[1], Takis Kasparis[2], Pavlos Christodoulides[2], Charoula Theofanous[2], Marios Pantziaris[3], Efthyvoulos Kyriacou[4] and Constantinos Pattichis[5]

[1]*Departement of Computer Science, Intercollege, Limassol, Cyprus;* [2]*Departement of Electrical Engineering, Computer Engineering & Informatics, Cyprus University of Technology, Limassol, Cyprus;* [3]*Institute of Neurology and Genetics, Nicosia, Cyprus;* [4]*Frederick University, Department of Computer Science, Limassol, Cyprus;* [5]*Departement of Computer Science, University of Cyprus, Nicosia, Cyprus*

Tue. 23.3   **16:30-16:45**

Head Posture Influences the Geometric and Hemodynamic Features on the Healthy Human Carotid Bifurcation

Nicolas Aristokleous[1], Ioannis Seimenis[2], Yannis Papaharilaou[3], Mohammad Iman Khozeymeh[1], Georgios Georgiou[4], Brigitta Brott[5], Andreas Anayiotos[1]

[1]*Department of Mechanical Engineering and Materials Science and Engineering, Cyprus University of Technology Limassol, Cyprus;* [2]*Department of Medicine Democritus, University of Thrace Alexandroupolis, Greece;* [3]*Institute of Applied and Computational Mathematics Foundation for Research and Technology-Hellas Heraklion, Creten, Greece;* [4]*Department of Mathematics and Statistics, University of Cyprus Nicosia, Cyprus;* [5]*Department of Medicine, University of Alabama at Birmingham, Birmingham, USA*

Tue. 23.4   **16:45-17:00**

Combination of different texture features for mammographic density classification

Gregoris Liasis[1], Constantinos Pattichis[2] and Styliani Petroudi[2]

[1]*Department of Information and Communication Systems, Open University of Cyprus, Nicosia, Cyprus;* [2]*Department of Computer Science, University of Cyprus, Nicosia, Cyprus*

Tue. 23.5   **17:00-17:15**

A configurable system for role-specific video imaging during laparoscopic surgery

Yuebing Jiang[1], Timothy Perez[2], Marios Pattichis[1], and Bilal Khan[2]

[1]*Department of ECE, University of New Mexico, Albuquerque, USA;* [2]*Department of Surgery, University of New Mexico, Albuquerque, USA*

Tue. 23.6   **17:15-17:30**

An Adaptive Multiscale AM-FM Texture Analysis System with Application to Hysteroscopy Imaging

Ioannis Constantinou[1], Marios Pattichis[2], Vasilis Tanos[3], Marios Neofytou[1] and Constantinos Pattichis[1]

[1]*Department of Computer Science, University of Cyprus, Nicosia, Cyprus;* [2]*Department of ECE, University of New Mexico, Albuquerque, USA;* [3]*Aretaeion Medical Center, Nicosia, Cyprus*

Closing Ceremony – Student Paper Competition Awards   18:00

Session: **Closing Ceremony – Student Paper Competition Awards**

Time & Place: **18:00-18:15 – Les Etoiles**

Chairpersons: **Constantinos S. Pattichis,** *University of Cyprus, Cyprus*
                          Nicolas Bourbakis, *BIBE Founding Steering Committee Chair*

Tue. 24.1   **18:00-18:10**

Student Paper Competition Awards

Styliani Petroudi, *Department of Computer Science, University of Cyprus, Cyprus*

Ilias Maglogiannis, *Department of Computer Science and Biomedical Informatics, University of Central Greece*

Tue. 24.2   **18:10-18:15**

Concluding Remarks

Constantinos S. Pattichis, *Department of Computer Science, University of Cyprus, Cyprus*

Nicolas Bourbakis, *BIBE Founding Steering Committee Chair*

Cypriot Souvlaki Dinner   19:15