



Personal Data

Name	Aris
Surname	Tzavaras
Date of birth	4 Sept. 1972
Home address	Archelaou 65, Athens 13676, Greece.
Tel.	Home: 0030 210 2432 278 mobile: 0030 6944 595 070
e-mail	atzavaras@live.com

Short Profile

Strong academic training and multidisciplinary working experience in Health Technology and Informatics (BSc, MSc & PhD). In depth knowledge of Artificial Intelligence (AI) learning and optimization techniques. Hands on experience in designing prototype non-invasive physiology monitoring equipment. Advanced communication and presentation skills.

My CV shows that I would bring important skills to the position, including:

- Multidisciplinary working experience and academic training that strengthens my capacity to collaborate with specialists from different backgrounds.
- In depth knowledge of Clinical Decision Support Systems (CDSS) in the field of respiratory support management, exhibited by several international articles (underlined in the Publications section of the CV).
- Expertise in the application of Genetic Algorithms, Fuzzy Logic, Artificial Neural Networks, and hybrid models (such as ANFIS and Genetically Evolved Fuzzy Systems).
- Strong theoretical background and hands on experience in design of non-invasive physiology monitoring prototypes.
- Experience in biomedical instrumentation & transducers, Electronic design, PCB design and production.
- Strong communication and presentation skills strengthen by my experience as an Academic lecturer.

Academic Qualifications

10/03/2010

Ph.D. Health Informatics. Dissertation “Intelligent Decision Support Systems in Ventilation Management”, City University London UK.

The Ph.D. dissertation focus on the application of artificial intelligence methods and machine learning algorithms for supporting clinical personnel in the task of adapting mechanical ventilation to the ongoing changing needs of the Intensive Care patients. Ventilation management is a complex task performed by highly specialized personnel in the ICU. The aim of the research was to evaluate different methods for developing a Clinical Decision Support System, trained or evolved from real patients’ recordings. Fuzzy Logic, Artificial Neural Networks and Genetic Algorithms were individually or synergistically applied, forming hybrid systems, to deal with the task. Three models were put to the test; namely Artificial Neural Networks, Genetically Evolved Fuzzy Systems and Adaptive Neuro Fuzzy Inference Systems

- (ANFIS).
- 10/02/2005 Diploma (awarded) Health Systems Management. University of Hygiene & Tropical Medicine, University of London, UK.
- 01/11/2004 MSc Health Systems Management. University of Hygiene & Tropical Medicine, University of London, UK.
- 01/11/1996 MSc (distinction) Medical Electronics & Physics. Queen Mary & Westfield College, University of London, UK.
- 11/07/1995 BSc Biomedical Engineering (former dep. Medical Instrumentation Technology). Technological Educational Institution of Athens, Greece.

Working Experience

- 2016—2017 Auditor for ISO 9001 & 13485, EKAPTY (National Evaluation Center of Quality & Technology in Health SA), Athens, Greece.
- 2016—2017 Evaluator for CE Certification process of medical devices, EKAPTY (National Evaluation Center of Quality & Technology in Health SA), Athens, Greece.
- 2002—2017 Full time Biomedical Engineer (Tenured), dep. of Biomedical Technology Engineering, Technological Educational Institute of Athens, Ag. Spiridonos, Egaleo, Athens, Greece.
Role Description: Maintain laboratory equipment and biomedical equipment in working condition, support laboratory IT infrastructure, design and evaluate biomedical prototypes for funded research projects, design laboratory exercises to simulate hospital environment, provide students with theoretical background, physiology principles and application demonstrations with the use of patient simulators and biomedical testers.
Noteworthy Achievements: Design and implementation of Artificial Intelligence Algorithms for Home Care Decision Making, design and implementation of a simulated DICOM-PACS computer laboratory, design and implementation of on line electronic Health Records, design and evaluation of biomedical prototypes (reflectance pulse oximeter, CPAP wireless monitoring equipment, and wireless body area network ECG equipment).
- 2000—2002 Technical Manager, Panou Ltd, Efstathiou 19, Athens, Greece.
Role Description: Head of Service department for biomedical, military and conference audiovisual equipment. Organize and coordinate a group of eight technicians for preventive maintenance and installation of new equipment. Project management of large installations. Liaison between different interests groups: sales, clinical personnel, finance officers, architects, hospital's technical personnel. Technical support for the sales department.
Health sector: Radiology and ICU departments.
Products: Digital X-ray (DR swissray) equipment, DICOM-PACS solutions, MagnetoEncephaloGraphy (MEG) equipment (Elekta Neuromag), ICU transcranial Doppler.
Noteworthy Achievements: Project management for the 1st installation in Greece of MagnetoEncephaloGraphy (MEG) equipment for the Alexadroupolis University Hospital. Project management for the installation of two DR systems for military hospitals including DICOM – PACS solutions.
- 1998—1999 Product Manager, cardiology & I.C.U. monitoring equipment, N. Papapostolou ltd, E. Antistaseos 93, N. Phyxiko , Athens, Greece.
Role Description: Head of Sales for the cardiology – monitoring equipment. Management and coordination of a group of three people. Forecasting and annual sales projection for the department. Cooperation with technical department for the successful installation of equipment. Preparation of technical and financial information for large public and private sector tenders competitions. Cooperation with clinical personnel, directors of medical departments, hospital's technical personnel, product manufacturers.

- Health sector:* Outpatient cardiology, ICU, Surgical Units.
Products: Schiller cardiology (ECG, Stress Test and monitoring equipment), Mennen Medical monitoring equipment, Physio-control defibrillators.
Noteworthy Achievements: Successful outcome for major tender competition (Ioannina University Hospital, 10 ICU beds with central station monitoring), successful introduction and installation to the Greek market of Schiller's stress test products.
- 1997—1998 Service Engineer, Biomedical Department, 251 General Airforce military hospital, Athens, Greece.
Role Description: Biomedical service engineer for Hospital equipment.
Health sector: Outpatient departments, ICUs, Emergency department.
Products: Mechanical Ventilators (Airliquid and Draeger), Defibrillators, Patient monitors, blood gas analyzers.
Noteworthy Achievements: Training of ICU personnel on mechanical ventilation technology. Technical report on isolated ward and ICU rooms.
- 1995—1996 Internship as Service Engineer, Anaesthesia & Ventilation equipment, N. Papapostolou ltd, E. Antistaseos 93, N. Phyxiko, Athens, Greece.
Role Description: Biomedical service engineer for Anesthesia and Mechanical Ventilators.
Health sector: ICUs, Surgical Units.
Products: Mechanical Ventilators (Draeger), Anesthesia equipment (Draeger).

Academic Experience

- 2014 - 2017 Coordinator for the MSc course "Biomedical Technology on home Health Surveillance and Treatment, Networked Health Services Provision", for the MSc course in Advanced Systems and Methods in Biomedical Engineering, Technological Educational Institute of Athens, Ag. Spiridonos, Egaleo, Athens, Greece.
- 2014 - 2017 Lecturer in Clinical Decision Support Systems & Embedded Systems, for the MSc course in Advanced Systems and Methods in Biomedical Engineering, Technological Educational Institute of Athens, Ag. Spiridonos, Egaleo, Athens, Greece.
- 2013—2015 Lecturer in Project Management, Feedback control systems-Bioautomation and ICU-Surgery Biomedical Technology courses, for the dep. of Biomedical Engineering, Technological Educational Institute of Athens, Ag. Spiridonos, Egaleo, Athens, Greece.
- 2008—2010 Lecturer in Health Informatics, Biomedical Technology Management & e-Health, for the National Centre for Public Administration & Local Government (EKDDA), 211 Pireos str., 177 78 - Tavros, Athens, Greece.
- 2008—2012 Supplementary Lectures in MSc Information Technologies in Medicine and Biology, Department of Informatics and Telecommunications of the National and Kapodistrian University of Athens in cooperation with the Department of Medical Instruments Technology, Faculty of Technology Applications, of the Technological Educational Institute (TEI) of Athens, and in collaboration with the Foundation for Biomedical Research of the Academy of Athens (BRFAA) and the Institute of Informatics and Telecommunications of the National Centre for Scientific Research "Demokritos".
- 1999—2000 Lecturer in Electronics, Hellenic Aerospace Industry, Tanagra, Greece.
- 1999—2011 Adjunct Laboratory Professor dep. of Biomedical Technology Engineering, Technological Educational Institute of Athens, Ag. Spiridonos, Egaleo, Athens, Greece.

Research Projects Experience

- 1996 - 1998 Researcher in: European Funded Research Program “**A Prototype Device for Standardized Calibration of Pulse Oximeters**”, TEI of Athens, **Affiliations: 1:** Institut für Medizintechnik, MU zu Luebeck, Germany **2:** Klinik für Anaesthesiologie, MU zu Luebeck, Germany. **3:** Labor für Regelungstechnik, FH Luebeck, Germany **4:** Labor für Biomedizintechnik, FH Luebeck, Germany **5:** KU Leuven, Belgium **6:** St. Mary’s Hospital, London, U.K. **7:** Instituto Oncologico, San Sebastian, Spain **8:** T.E.I. Athens, Greece **9:** ERGO S.A., Athens, Greece **10:** F.O.R.T.H., Crete, Greece **11:** U.S. Food and Drug Administration (FDA), U.S.A
- 2003 - 2003 Researcher in: EPEAEK (Operational Programme for Education and Initial Vocational Training) T.E.I. of Athens, third Community Support Framework’s 24 Operational Programmes (2000-2006) in Greece co-financed by the European Social Fund, the European Regional Development Fund and national resources. Project title: **Software development for the Laboratory of health sector network applications & signal acquisition.**
- 2004 - 2005 Researcher in: EPEAEK (Operational Programme for Education and Initial Vocational Training) T.E.I. of Athens, third Community Support Framework’s 24 Operational Programmes (2000-2006) in Greece co-financed by the European Social Fund, the European Regional Development Fund and national resources. Project title: **Software design & development for the Laboratory of health sector network applications & signal acquisition, development of PACS systems.**
- 2004 -2006 Researcher in: Archimedes I, T.E.I. of Athens, co-funded by the Greek ministry of education and the EU. Project title: **Software development for the preparation of introducing Greek DRGs.**
- 2012 - 2015 Researcher in: Archimedes III, T.E.I. of Athens, co-funded by the Greek ministry of education and the EU. Project title: **Development of Equipment and Software for supporting the Continuity of Medical Care between primary health sector, Hospitals and Home Care for the Greek NHS, according to National and International protocols & regulations.**

Certified Training

- 2008 **ECDL equivalent certificate**, Technological Educational Institute of Athens.
- 2002 **Introduction to Embedded Software Engineering**, Institute for System Level Integration, The Alba Campus.
- 2000 **ISO Internal auditor**, Amacon Advanced Management Consultants.
- 2000 **Training Certificate in Digital Radiology Systems**, SwissRay Switzerland.
- 1999 **Microsoft Visual C++**, Microsoft Certified, Technical Education Center.
- 1998 **Training Certificate in Cardiology Systems**, Schiller Switzerland.
- 1997 **Telecommunications Training Certificate**, Hellenic Air Force training campus, Kavouri, Greece.

Skills and acquired knowledge

- Engineering:
- Electronic CAD design, co-simulation, PCB prototyping (Proteus & Altium Designer software).
 - Hydraulics – Pneumatics – PLCs CAD design and simulation (Automation Studio software).
 - Matlab software (@Mathworks), Image and Signal Processing, Signal Acquisition, Statistical Analysis, Artificial Intelligence.
 - MS Visual Studio, SQL, VBA, Web applications.

	Microcontrollers programming (Parallax BS and Propeller, Microchip PIC family).
	Artificial Intelligence (Fuzzy Logic, Neural Networks, Genetic Algorithms, Bayesian Networks, Hybrid Systems).
	Biomedical Equipment, Instrumentation design and prototyping (Designed Prototyped Devices: Wireless body Sensor Networks for Ventilation Support during sleep, Wireless body Sensor Networks Pulse Oximeters and wearable ECG, Ventilation Support equipment, Thoracic Impedance Tomography, Lung Sound Imaging Devices, RFID blood refrigerator content monitor, NIBP acquisition modules, Microscopy Spectral Analysis).
	Clinical Decision Support software tools.
	DICOM – PACS systems.
Management –	Project Management (Software: OpenProject, ZOHO Project Management).
Economics:	Health Economics: Diagnosis Related Groups (DRGs).
	Health Economics: Capital Budgeting for Medical equipment.
Other:	ISO 9001 & 13485 and CE certification process.
	Real Time Operating Systems.
	MS Office (Word, Excel, PowerPoint, Publisher).
	Presentation skills.

Scientific Publications

International peer-reviewed journals:

- B. Spyropoulos, M. Botsivaly, K. Koutsourakis, M. Marinis, P. Sochos and **A. Tzavaras**, Application Tools supporting Decision Making in the Modern Hospital, *International Journal of Scientific Research (IJSR)*, 2006;16: 129-133.
- M. Botsivaly, B. Spyropoulos, M. Marinis, P. Sarantakis, G. Nikoloudakis, I. Balabanis, N. Karagiannis, I. Limnou, M. Moschidis, **A. Tzavaras**, K. Koutsourakis, Software Development for the Estimation of the Mean DRGs related Treatment Cost, *J. Stud in Health Technol Inform*, 2006; 12: 307-312.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, K. Koutsourakis, E. Koulouris, D. Liargovas, K. Mertika, “Development of a system supporting Patient Supervision and Treatment in contemporary Home–Care”, *J. Stud. in Health Tech and Inform*, 2006;124:91-98.
- B. Spyropoulos, **A. Tzavaras**, M. Botsivaly, “Development of a low-cost on-line Blood-product Refrigerators’ Inventory Management System based on RFID-tagging”, *Transfusion Supplement*, 2008;48:256A.
- B. Spyropoulos, **A. Tzavaras**, M. Botsivaly, K. Koutsourakis, “Ensuring the Continuity of Care of Cardio-respiratory Diseases at Home: Monitoring Equipment and Medical Data Exchange over Semantically annotated Web Services”, *Methods of Inf Med*. 2010; 49(2):156-160.
- A. Tzavaras**, P.R. Weller, Classical approaches and intelligent systems in Ventilation Management: A Survey. Critical reviews in biomedical engineering 2010; 38(2); 157-188.

Peer reviewed conference proceedings:

- A. Tzavaras**, M. Athanasiou, A. Hatjiokakimidis, P. Diamandi, E. Ventouras, “Implementation of a simulated Radiology DICOM–PACS network”, *Proc. WSEAS conference on Engineering Education, Venice, Italy, 2004*, WSEAS Transactions on Advances in Engineering Education, 2004;.1:45-47.
- A. Tzavaras**, B. Spyropoulos, A. Koufakis, K. Gatsios, Multivariable Fuzzy Logic Ventilator Advisory System, Paper Nr. 1716, Proceedings of the EMBEC’ 05 Conference 20-25 November 2005, Prague, Czech Republic.
- M. Botsivaly, B. Spyropoulos, **A. Tzavaras**, P. Sarantakis, M. Moschidis, M. Marinis, K. Koutsourakis, A Software-Tool allowing for Departmental Hospital Operational Cost Estimation, Paper Nr. 1697, Proceedings of the EMBEC’ 05 Conference 20-25 November 2005, Prague, Czech Republic.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, G. Nikoloudakis, I. Balabanis, N. Karagiannis, I. Limnou, Acquisition of Cost Data for Surgery and Intensive Medicine to be employed for drafting a DRGs Hospital Reimbursement System in Greece, Paper Nr. 2067, Proceedings of the EMBEC’ 05 Conference 20-25 November 2005, Prague, Czech Republic.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, K. Koutsourakis, A comprehensive Training Approach for Biomedical Engineers in Intensive Medicine and Operation Room Technology, Proceedings of the 2005 WSEAS International Conference on Engineering Education, Vouliagmeni, Athens, Greece, July 8-10, 2005.

- A Tzavaras**, N. Kontodimopoulos, E. Monoyiou, I. Kalatzis, N. Piliouras, I. Trapezanidis, D. Cavouras, E. Ventouras, Upgrading Undergraduate Biomedical Engineering Laboratory Training, Engineering in Medicine and Biology Society, 2005. IEEE-EMBS 2005. 27th Annual International Conference of the IEEE, 17-18 Jan. 2006 Page(s):353 – 356.
- B. Spyropoulos, **A. Tzavaras**, M. Botsivaly, M. Moschidis, K. Koutsourakis, An integrated System supporting Training in medical and administrative Decision Making in the Emergency Department, Engineering in Medicine and Biology Society, 2006. EMBS '06. 28th Annual International Conference of the IEEE, Aug. 30 2006-Sept. 3 2006 Page(s):2593 - 2596 .
- A. Tzavaras**, E. Koulouris, D. Liargovas, T. Athanassiadis, A. Lychounas, M. Botsivaly, B. Spyropoulos, Development of custom made Patient-monitoring Hardware supporting Home-Care, Proceedings of the 5th European Symposium on Biomedical Engineering (ESBME 2006), 7-9 July, 2006, Patra, Greece.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, K. Koutsourakis, Extending the use of DRGs to estimate mean Home-Care cost by employing an adapted ASTM E2369-05 Continuity of Care Record, Engineering in Medicine and Biology Society, 2006. EMBS '06. 28th Annual International Conference of the IEEE, Aug. 30 2006-Sept. 3 2006 Page(s):5210 – 5213.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, K. Koutsourakis, E. Koulouris, D. Liargovas, K. Mertika, Development of a system supporting Patient Supervision and Treatment in contemporary Home-Care: Status Report, Proceedings of MIE 2006, 27-30 August 2006, Maastricht, The Netherlands (also appears in Stud Health Technol Inform 124 (2006) 91-96).
- B. Spyropoulos, **A. Tzavaras**, M. Botsivaly, K. Koutsourakis, E. Koulouris, and D. Liargovas, Development of Low-Cost Hardware Supporting Mobile Home-Care, World Congress on Medical Physics and Biomedical Engineering 2006 (WC2006), August 27 - September 1, 2006, Seoul, South Korea.
- A. Tzavaras**, B. Spyropoulos, R. Gruen, Diagnosis Related Groups: Approval and suitability for the Greek National Health System, Proceedings of ITAB 2006, 26-28 October 2006, Ioannina, Greece.
- A Tzavaras**, P.R. Weller, B. Spyropoulos A, A Neuro-Fuzzy Controller for the estimation of Tidal Volume and Respiration Frequency ventilator settings for COPD patients ventilated in control mode. Engineering in Medicine and Biology Society, 2007. EMBS 2007. 29th Annual International Conference of the IEEE, 22-26 Aug. 2007 Page(s):3765 – 3768.
- B. Spyropoulos, **A. Tzavaras**, M. Botsivaly, D. Kligopoulos, A. I. Filippas, K. Mertika, T. Athanassiadis, E. Koulouris, D. Liargovas, A. Lychounas, K. Koutsourakis, Developing an integrated system supporting contemporary Home-Care, Proceedings of the 12th World Congress on Health Informatics MEDINFO 2007, 20-24 August 2007, Brisbane, Australia.
- B. Spyropoulos, **A. Tzavaras**, M. Botsivaly, K. Koutsourakis, Supporting Cardio-respiratory Diseases related House-call Medical Practice. In: B.Blobel, P.Pharow, J.Zvarova and D.M.Lopez (Eds.): Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics to the Edge – CeHR 2007 Conference Proceedings. IOS Press and Akademische Verlagsgesellschaft Aka, Berlin 2008.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, Software supporting the Continuity and the Assessment of the Resources necessary for contemporary Home-care. In: B.Blobel, P.Pharow, J.Zvarova and D.M.Lopez (Eds.): Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics to the Edge – CeHR 2007 Conference Proceedings. IOS Press and Akademische Verlagsgesellschaft Aka, Berlin 2008.
- A.Tzavaras**, B. Spyropoulos, E. Kokalis, A. Palaiologos, D. Georgopoulos, G. Prinianakis, M. Botsivaly P.R.Weller, A Classification Attempt of COPD, ALI-ARDS and Normal Lungs of ventilated Patients through Compliance and Resistance over Time Waveform Discrimination, , IFMB Proceedings (EMBECE November 23-28, 2008, Antwerp, Belgium), Springer, 2008, Vol. 22, pp.192-195.
- A. Tzavaras**, B. Spyropoulos, P. Weller, Decision support tools in the ICU: ventilation management for patients with COPD, MEDICEXPO 2008, Athens, Greece.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, P. Spyropoulou, “Towards Digital Blood-Banking”, ITU-T Kaleidoscope event, Mar del Plata, Argentina, 31 Aug - 1 Sep 2009.
- A. Tzavaras**, P.R.Weller, G. Prinianakis, A. Lahana, P. Afedoulis, B. Spyropoulos, Locating of the Required Key-Variables to Be Employed in a Ventilation Management Decision Support System, 33rd Annual International IEEE EMBS Conference, August 30 - September 3, 2011, Boston Marriott Copley Place, Boston, MA, USA.
- B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, Supporting technically the Continuity of Medical Care: Status report and perspectives, ITU Kaleidoscope event, 12 – 14 December 2011, Cape Town, South Africa.
- P. Afentoulidis, **A. Tzavaras**, B. Spyropoulos ,Development status of a low cost system quasi-visualizing pathological alteration of the lungs based on their acoustic response modification, ESCR 2011 Annual Scientific Meeting, Amsterdam, the Netherlands, October 27 – 29, 2011.

A. Tzavaras, B. Spyropoulos, Development of a Low-Cost Wireless Monitoring System Supporting the Continuity of Medical Care of the Patient at Home, 35th Annual International IEEE EMBS Conference, Osaka, Japan, 3-7 Jul, 2013.

B. Spyropoulos, **A. Tzavaras**, D. Zogogianni, M. Botsivaly, Adapting the Design of Anesthesia Information Management Systems to Innovations Depicted in Industrial Property Documents, 35th Annual International IEEE EMBS Conference, Osaka, Japan, 3-7 Jul, 2013.

B. Spyropoulos, **A. Tzavaras**, P. Afentoulifis, M. Botsivaly, Supporting medical house-call by expanding bedside in-vitro point of care test-range and attaining respiratory sounds' visualization, Point-of-Care Healthcare Technologies (PHT), 2013 IEEE, DOI: 10.1109/PHT.2013.6461309.

A. Tzavaras, B. Spyropoulos, P.R. Weller, Fuzzy Reasoning Clinical Decision Support for Manual Titration of Positive Airway Pressure Support and Oxygen supply in Patients with Obstructive Sleep Apnea, IEEE BHI 2014, Valencia, Spain, 1-4 June, 2014.

A. Tzavaras, B. Spyropoulos, Development of a system for telemonitoring of respiration parameters for patients with Obstructive Sleep Apnea, EMBC 2014, Conf Proc IEEE Eng Med Biol Soc. 2014;2014:3472-5. doi: 10.1109/EMBC.2014.6944370.

Book contributions:

B. Spyropoulos, M. Botsivaly, **A. Tzavaras**, K. Koutsourakis, Optimization of Medical Supervision, Management, and Reimbursement of contemporary Home Care. In: Encyclopedia of Healthcare Information Systems, (edited by Dr. Wickramasinghe and Eliezer Geisler) ISBN: 978-1-59904-889-5, IGI Global, Hershey, PA, USA, 2008.

A. Tzavaras, E. Ventouras, Evaluation of a Radiology Picture Archiving and Communication System Laboratory Exercise, Current Developments in Technology-Assisted Education (2006). VOL. II: Technological Science Education, Collaborative Learning, Knowledge Management, pp. 735-1404, ISBN of Collection (13): 978-84-690-2469-8 / ISBN Vol. II (13): 978-84-690-2472-8.

Books:

A. Tzavaras, Capital Budgeting Analysis for Medical Equipment, Radiology Department, ISBN-13: 978-1456525026.

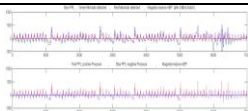
Selected short papers-abstracts conference peer-reviewed proceedings:

G. Angelopoulos, C. Tsigkas, **A. Tzavaras**, B. Spyropoulos; Digital Multiplexer supported scanning Data Collection Method to be employed in Electrical Impedance Tomography simulation measurements, ESCR 2010, Prague, Czech Republic, October 28-30, 2010.

B. Spyropoulos, M. Marinis, V. Mamakou, M. Botsivaly, **A. Tzavaras**, Software supporting Physicians Training in Patients DRG-Assignment Rules and ISO 13606-1 compliant Discharge Reporting, AMIA 2010, Washington, DC, Nov. 13-17, 2010.

A. Tzavaras, P.R. Weller, B. Spyropoulos, Developing and Evaluating Intelligent Decision Support Models in Ventilation Management, EFMI STC Conference, Prague Czech Republic, 17-19 April, 2013.

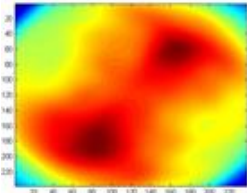
Overview of selected projects & designed prototypes:



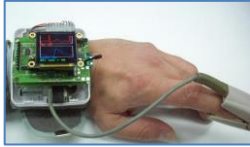
Non-invasive blood pressure monitoring: Optical measurement of blood velocity profile, correlation of plethysmography area under the curve and plethysmography curve transmission delay to blood pressure (on-going project).



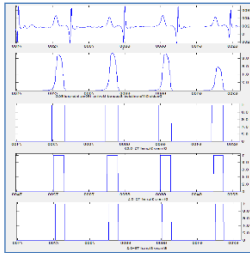
Home Care Sleep Lab: Microcontroller controlled wireless sensors for monitoring respiratory flow, volume and pressure, patient's ECG & EEG. Collected data were automatically transmitted via XBee wireless technology to a personal computer for analysis.



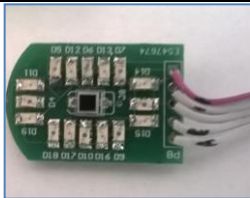
Digital Multiplexer Electrical Impedance Tomography (EIT): Design and laboratory evaluation of a 16 channel EIT device for measuring thoracic impedance changes during respiration cycle. Microcontroller controlled instrumentation and Matlab signal analysis and image reconstruction.



Wearable physiology monitor: Microcontroller controlled ECG, SpO₂ and NIBP monitor for autonomous measurement of Heart Rate, Oxygen Saturation and Blood Pressure. Measured values were transmitted via XBee technology to a personal computer acting as server for permitting remote monitoring of patient's health status.



Ventricular Fibrillation detection algorithms: Developed and tested two algorithms working in time-domain; namely the Heart Rate Detection Integral Threshold (HRDIT) algorithm and the Heart Rate Detection Multiple Threshold Comparison (HRDMTC) algorithm. The HRDMTC & HRDIT algorithms performed with IROC 87 & 77% respectively, applied on international ECG databases.



Reflectance Pulse Oximeter: Design and development of a prototype device and sensor for measuring Arterial Oxygen Saturation, utilizing reflectance pulse oximetry technique.



Lung sounds imaging: Lung sound real time acquisition utilizing a 3 X 5 piezoelectric microphone matrix. Acquired signals are analyzed in time frames to produce a "cine" like representation of the alteration of lung sounds during spontaneous breathing.



Wearable wireless ECG monitor: Cell phone size ECG measuring device capable of wireless transmission of data and wirelessly controlled for remote adjustment of embedded algorithms parameters.



Home Care Ventilation monitor: Design and development of a prototype device for measuring at bed side the ventilation efficiency. The system monitors respiration parameters (pressure, volume, flow and End Tidal CO₂ & O₂ concentrations) and wireless transmits data to a personal computer.