Ioannis Valavanis

Electrical and Computer Engineer, M.Sc., Ph.D.

Contact Information
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Personal Information
Nationality: Greek
Date of Birth: 27/9/1980
Marital Status: Single

Current Position
-Post-Doctoral Research Associate, Group of Metabolic Engineering and Bioinformatics, Institute of Biological Research and Biotechnology, National Hellenic Research Foundation (NHRF), Athens, Greece
-Visiting Lecturer, Department of Computer Science and Technology, University of Peloponnese, Tripolis, Greece
-Visiting Faculty, Technological Education Institute of Chalkida, Greece

Education

2003-2009 — National Technical University of Athens, Greece
School of Electrical and Computer Engineering
Ph.D. Studies. Ph.D. Title: Development of Network based Hybrid Algorithms for the Study of Interrelations within Biological/Environmental Data (Supervisor: Prof. Konstantina Nikita)

2003-2006 — University of Athens, Greece
Department of Biology
Degree Awarded: **M.Sc. in Bioinformatics**, Grade: 7.8/10
M.Sc. Thesis: Geometrical Modelling and Transmembrane Segments Detection of β-Barrel Transmembrane Proteins (10/10) (Supervisor: Prof. Ioannis Emiris from the Department of Informatics and Telecommunications)

1998-2003 — National Technical University of Athens, Greece
School of Electrical and Computer Engineering
Degree Awarded: **Diploma**, Grade: 7.26/10
Diploma Thesis: Development of a computer–aided diagnosis system for focal hepatic lesions from Computer Tomography images based on textural features and multiple classifiers (10/10) (Supervisor: Prof. Konstantina Nikita)

Research Experience

January 2010 - now

Post-Doctoral Research Associate, Group of Metabolic Engineering and Bioinformatics, Institute of Biological Research and Biotechnology, National Hellenic Research Foundation (NHRF), Athens, Greece

I conduct research mostly on microarray data analysis and biological data mining based on artificial intelligence and biological ontologies. I am actively involved in the project **e-LICO** (e-Laboratory for Interdisciplinary Collaborative Research in Data Mining and Data-Intensive Sciences) (FP7.ICT.2007, 2009-2012).

October 2003 - December 2009

Graduate Research Assistant, Biomedical Simulations and Medical Imaging (BIOSIM) Unit, School of Electrical and Computer Engineering, National Technical University of Athens, Greece (member of the research group as a PhD Candidate)

My research included my PhD research, i.e. intelligent analysis of multifactorial diseases data using artificial neural networks and hybrids, and analysis of protein data (sequences, structures) using networks, as well as medical image processing and computer aided diagnosis. I also worked on the submission of EU or National funded project proposals and was involved in the following:

Micro^{2}DNA (FP6-027333-STP, Integrated polymer-base microfluidic micro system for DNA extraction, amplification, and silicon-based detection, 2006-2009)

2/2006-4/2009: Designed and developed artificial intelligence algorithms for disease risk assessment based on genetic/environmental data

ACTIONS Access Control, Ticketing and Marketing Applications based on a Multi-application Smart Card Platform for the Sport Events Industry.

9/2004-2/2005: Worked as a programmer

E-Medit East Mediterranean Cohesion on Information and Telecommunications.

1/2007-4/2007: Worked as a programmer

October 2006 - October 2009

Research Associate, Zenon, S.A. / Innora Ltd, Greece

I worked within the project **FilmFree** (IP5157462, Development of novel digital radiography technology. To facilitate the 'traditionally less research intensive inspection industry sector, 2005-2009). Designed and developed defect detection and classification algorithms for welds radiographic images using C++, Wrote progress reports and participated in various project meetings

Teaching Experience

November 2010 - now

Visiting Lecturer at the Department of Computer Science and Technology, University of Peloponnese, Tripolis, Greece

Teaching: Computers Architecture I (3rd Semester, Winter 2010), Compilers I (5th Semester, Winter 2010)

March 2010 - now

Visiting Faculty at the Department of Electrical Engineering at the Technological Education Institute (TEI) of Chalkida, Greece (at the rank of Assistant Professor of TEI)

Teaching: Control Systems I - Theory (4th Semester, Spring 2010, Winter 2010), Control Systems I - Laboratory (4th Semester, Winter 2010), Electrotechnics -

Theory (5th Semester, taught at the Department of Mechanical Engineering, Spring 2010),

January 2010

Two lectures given within the post-graduate course «Basic Principles and Technologies in Bioinformatics» (School of Electrical and Computer Engineering National Technical University of Athens, Greece) on network-based methods for the process of bioinformatics data

October 2003 - January 2009

Graduate Teaching Assistant: Within the courses of "Laboratories of Biomedical Engineering" (Spring Semesters 2004-2008) and "Simulation of Physiological Systems" (Winter Semesters 2003-2008). Co-mentored five diploma or MSc Theses in the fields of Bioinformatics and Artificial Intelligence

Other Professional Experience

February 2009-October 2009

Greek Army, Served as soldier in Artillery at Thiva and Didymoteixon, Greece

January 2003-December 2004

Worked as freelancer in the areas of computers technical support and programming, and translations of biomedical texts (english to greek and vice-versa)

July 2002-October 2002

Trainee at Company GmbH, Hamburg, Germany
Worked on the implementation of computer vision algorithms in C++ and software testing

Publications

Peer-Reviewed Journals

J.1. G. Stoitsis, **I. Valavanis**, S.G. Mougiakakou, S. Golemati, K. S. Nikita, A. Nikita, "Computer Assisted Diagnosis based on Medical Image Processing and Artificial Intelligence Methods", Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Volume 569(20), 2006, pp. 591-595

J.2. Ioannis K. Valavanis, Pantelis G. Bagos, Ioannis Z. Emiris, "β-Barrel Transmembrane Proteins: Geometric Modelling, Transmembrane Part Detection and Structural Properties", Computational Biology and Chemistry, Volume 30(6), 2006, pp. 416-424

J.3. Stavroula G. Mougiakakou, **Ioannis K. Valavanis**, Alexandra Nikita and Konstantina S. Nikita, "Differential diagnosis of CT focal liver lesions using texture features, feature selection and ensemble driven classifiers", Artificial Intelligence in Medicine, 41(1), 2007, pp. 25-37

J.4. Stavroula G. Mougiakakou, **Ioannis K. Valavanis**, Nikolaos A. Mouravliasky, Alexandra Nikita and Konstantina S. Nikita, "DIAGNOSIS: "A telematics Enabled System for Medical Image Archiving, Management and Diagnosis Assistance", IEEE Transactions on Instrumentation and Measurement, 58(7), 2009, pp. 2113-2120

J.5. Ioannis K. Valavanis, George M. Spyrou, Konstantina S. Nikita, "A comparative study of multi-classification methods for protein fold recognition", International Journal of Computational Intelligence in Bioinformatics and Systems Biology (Special Issue: Classify the Classifiers), 1(3), 2010, pp. 332-346

J.6. Ioannis Valavanis, George Spyrou, Konstantina Nikita, "A Similarity Network Approach for the Analysis and Comparison of Protein Sequence/Structure Sets", Journal of Biomedical Informatics, 43(2), 2010, pp. 257-67

J.7. Ioannis Valavanis, Dimitrios Kosmopoulos, "Multiclass Defect Detection and Classification in Weld Radiographic Images using Geometric and Texture Features", Expert Systems with Applications, 2010, 37 (12), pp. 7606-7614

J.8. Ioannis K. Valavanis, Stavroula G. Mougiakakou, Keith A. Grimaldi, Konstantina S. Nikita. "A multifactorial analysis of obesity as CVD risk factor: use of neural network based methods in a nutrigenetics context", BMC Bioinformatics, 2010,11:453

J.9. N. Tsiaparas, S. Golemati, I. Andreadis, **I. Valavanis**, K. Nikita, "Comparison of multiresolution features for texture classification of Carotid Atherosclerosıs from B-mode Ultrasound", IEEE Transactions in Information Technology in Biomedicine (To appear)

Under Review or Preparation Journal Articles

Micro^{2}DNA Consortium, "A Holistic Approach to the Evaluation of Risk of CVD based on a Novel Platform for Molecular Diagnostics" (*under preparation*)

Book Chapters

B.1. Stavroula G. Mougiakakou, **Ioannis Valavanis**, Alexandra Nikita, Konstantina S. Nikita, "Computer Aided Diagnosis of CT Focal Liver Lesions based on Texture Features, Feature Selection and Ensembles of Classifiers", Artificial Intelligence Applications and Innovations, 3rd IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI) 2006, IFIP 204 Springer, pp. 705-712, 2006, ISBN 0-387-34223-0 (appears as C5, as well)

B.2. Spyretta Golemati, Stavroula Mougiakakou, John Stoitsis, **Ioannis Valavanis**, Konstantina Nikita, "Clinical Decision Support Systems: Basic Principles and Applications", in Clinical Knowledge Management: Opportunities and Challenges, Editor: R. Bali, IGP, USA, 2005

B.3. Stavroula G. Mougiakakou, **Ioannis K. Valavanis**, Alexandra Nikita, Konstantina S. Nikita, "Diagnostic Support Systems and Computational Intelligence: Differential Diagnosis of Hepatic Lesions from Computed Tomography Images", In Handbook of Research on Advanced Techniques in Diagnostic Imaging and Biomedical Applications, Editors: T.P. Exarchos, A. Papadopoulos, D.I. Fotiadis, published by Idea Group Inc., 2009

Conference Papers

C.1. S. Gr. Mougiakakou, **I. Valavanis**, K. S. Nikita, A. Nikita, D. Kelekis, "Characterization of CT Liver Lesions Based on Texture Features and a Multiple Neural Network Classification Scheme", Proceedings of the 25th Annual International Conference of the IEEE Engineering in Medicine and Biology, Cancun-Mexico City, 17-21 September 2003, pp. 1287-1290

C.2. I. Valavanis, S.G. Mougiakakou, K. S. Nikita, A. Nikita., "Computer aided diagnosis of CT focal Liver Lesions by an ensemble of Neural Network and Statistical Classifiers", Proceedings of the International Joint Conference on Neural Networks (IEEE), Budapest, Hungary, 26-29 July 2004, pp. 1929-1234

C.3. G. Stoitsis, **I. Valavanis**, S.G. Mougiakakou, S. Golemati, K. S. Nikita, A. Nikita, "Computer Assisted Diagnosis based on Medical Image Processing and Artificial Intelligence Methods", Proceedings of the 3rd International Conference on Imaging Technologies in Biomedical Sciences, Milos, Greece, 26-29 September 2005 (extended journal version appears as J.1)

C.4. S.G. Mougiakakou, **I. Valavanis**, N.A. Mouravliansky, K.S. Nikita, A. Nikita, "DIAGNOSIS: A Telematics Enabled System for Medical Image Archiving, Management and Diagnosis Assistance", Proceedings of IEEE International Workshop on Imaging Systems and Techniques (IEEE-IST2006), Minori, Italy, 29 April 2006, pp. 43-48 (extended journal version appears as J.4)

C.5. Stavroula G. Mougiakakou, **Ioannis Valavanis**, Alexandra Nikita, Konstantina S. Nikita, "Computer Aided Diagnosis of CT Focal Liver Lesions based on Texture Features, Feature Selection and Ensembles of Classifiers", Proceedings of the 3rd IFIP Conference on Artificial Intelligence Applications and Innovations, Athens, Greece, 7-9 June 2006, Springer Verlag, pp. 705-712 (appears as B.1, as well)

C.6. Ioannis K. Valavanis, Stauroula G. Mougiakakou, Alexandra Nikita, Konstantina S. Nikita, "Evaluation of Texture Features in Hepatic Tissue Characterization from Non-Enhanced CT Images", Proceedings of the 29th Annual International Conference of the IEEE Engineering in Medicine and Biology, Lyon, France, 23-26 August 2007, pp. 3741-3744

C.7. Ioannis Valavanis, George Spyrou, Konstantina Nikita, "Investigating the structure of protein similarity networks both on sequence and structural level", Proceedings of Hellenic European Research on Computer Mathematics and its Applications Conference (HERCMA 2007), Athens, Greece, 20-22 September 2007

C.8. Ioannis K. Valavanis, Stavroula G. Mougiakakou, Keith A. Grimaldi, Konstantina S. Nikita, "Analysis of Postprandial Lipemia as a Cardiovascular Disease Risk Factor using Genetic and Clinical Information: An Artificial Neural Network Perspective", Proceedings of the 30th Annual International Conference of the IEEE Engineering in Medicine and Biology, Vancouver, Canada, 20-24 August, 2008, pp. 4609-4612

C.9. I. K. Valavanis , S. G. Mougiakakou, S. Marinos, G. Karkalis, K. A. Grimaldi, R. Gill, K. S. Nikita, "Gene-Nutrition Interactions in the Onset of Obesity as Cardiovascular Disease Risk Factor Based on a Computational Intelligence Method", Proceedings of the 8th IEEE International Conference on Bioinformatics and Bioengineering, Athens, Greece, 8-10 October 2008

C.10. I. K. Valavanis , G. M. Spyrou, K. S. Nikita, "Protein Similarity Networks and Genetic Algorithm Driven Feature Selection for Fold Recognition", Proceedings of the 8th IEEE International Conference Bioinformatics and Bioengineering, Athens, Greece, 8-10 October 2008

C.11. Stavroula G. Mougiakakou, **Ioannis K. Valavanis**, George Karkalis, Stathis Marinos, Keith A. Grimaldi, and Konstantina S. Nikita, "An Integrated Web-based Platform for the Provision of Personalized Advice in People at High Risk for CVD", Proceedings 9th International Conference on Information Technology and Applications in Biomedicine, Larnaca, Cyprus, 5-7 November 2009

C.12. Ioannis Valavanis, Cécile Caubet, Ilias Maglogiannis, Julie Klein, Joost Schanstra, and Aristotelis Chatziioannou, "Analysis of pediatric obstructive nephropathy using protein antibody arrays and computational techniques", To appear in the Proceedings of the 10th IEEE International Conference on Information Technology and Applications in Biomedicine, Corfu, Greece, 3-5 November 2010

Abstracts/Posters (without review process)

S. G. Mougiakakou , **I. Valavanis**, N. Mouravlianski , A. Nikita , K. Nikita, "Diagnosis: An Integrated software system for the Enhancement of Diagnosis and Management of Computer Tomography Images", Greek Days of Research and Technology in a European Collaboration (poster), 22-23 June 2006, Athens, Greece

Ioannis K. Valavanis, Pantelis G. Bagos, Ioannis Z. Emiris, "β-Barrel Transmembrane Proteins: Geometric Modelling, Transmembrane Part Detection and Structural Properties" (abstract), Bioinformatics and Medical Informatics Meeting, 4-5 October 2006, Bioacademy, Athens, Greece

Ioannis Valavanis, Stavroula Mougiakakou, Keith Grimaldi, Konstantina Nikita, " Artificial Intelligence based Analysis of Postprandial Triglyceride Response using Genetic and Clinical Data" (abstract), Bioinformatics and Medical Informatics Meeting, 4-5 October 2007, Bioacademy, Athens, Greece

The publications above have been cited 48 times in publications not related to the authors by October 2010

Invited Talks

Protein Sequence- and Structure Based Similarity Networks: Within seminars at the Department of Informatics and Telecommunications, University of Athens, Greece, May 7th 2008 and on Net-Day at the Bioacademy of Athens, Greece, May 14th 2008

Academic Activities

Member of Organizing Committee of the 8th International Conference on Bioinformatics and Bioengineering, 8-10 October 2008, Athens, Greece

Journal Reviewer

International Journal of Computational Intelligence Research, Computerized Medical Imaging and Graphics, Microscopy Research and Techniques, Medical & Biological Engineering & Computing, IEEE Transactions on Information Technology in Biomedicine

Program Committee Member

The 4th International Symposium on Bio- and Medical Informatics and Cybernetics BMIC 2010, 2010 IEEE International Conference on Imaging Systems and Techniques, IEEE Biomedical Circuits and Systems Conference BIOCAS 2010, The 5th International Symposium on Bio- and Medical Informatics and Cybernetics BMIC 2011

Member of the Computational Biology and Bioinformatics Society in Greece

Awards

Scholarship for Ph.D. Studies in the field of Bioinformatics by the State Scholarships Foundation (IKY) of Greece after exams (November 2005 - April 2009)

Two months scholarship by the Institute of Communication and Computer Systems, Athens, Greece in 2004 for Ph.D. Studies

Award for “Science and Research Promotion” by Thomaidio Foundation, Greece due to publications (2003-2007)

My M.Sc. Thesis was selected and included in the «Book of Selected Diploma and M.Sc. Theses of the Department of Informatics and Telecommunications in the academic year 2005-2006» of the University of Athens, Greece

Award for the best diploma thesis at the National Technical University of Athens, Greece in 2003

Attendance of Seminars/Conferences

The Wonderful World of Microelectronics, 29/3/2003 - 5/4/2003, Athens, Greece, Board of European Students of Technology (BEST) (Seminar)

Intelligent Informatics Systems and Automated Diagnostic Techniques in Medicine, (ΕΥΦΥΕΣ), IBE-ITE, 80 hours, 22/11/2004 - 3/12/2004, Athens, Greece (Seminar)

Conferences in which papers C2,C3,C5,C7-C11 were presented, and the 4th conference of the Computational Biology and Bioinformatics Society in Greece (2009)

Computer Knowledge

Windows, MS Office, UNIX, Linux, SPSS, Matlab

C/C++, Java, Javascript, Perl, HTML, PHP

Languages

English: Proficiency of Michigan University in English

German: Kleines Sprach Diplom (Ludwig-Maximilians Universität zu München, Goethe Institut)

Greek: Native Language

Professional Memberships

Technical Chamber of Greece (TEE)

Institute of Electrical & Electronics Engineers (IEEE)

Scientific Interests

Bioinformatics Artificial Intelligence, Image Processing, Optimization, Data Mining, Computer Aided-Diagnosis, Biomedical Engineering