

CURRICULUM VITAE & RESEARCH WORK

of

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**Professor of Computer Science
Director of the Biomedical Engineering Research Centre
Dean of the School of Pure and Applied Sciences (2008 – 2011)**

**Fellow of IEEE
Fellow of International Academy of Medical and Biological Engineering (IAMBE)
Fellow of European Alliance for Medical and Biological Engineering & Science (EAMBES)
Fellow of Institute of Engineering Technology (FIET)**

<http://www.ehealthlab.cs.ucy.ac.cy/>

April 2021

Executive Summary

I. General Information

- Diploma of Technician Engineer in Electrical Eng., HTI, Cyprus, 1979.
- B.Sc. in Electrical Eng., University of New Brunswick, Canada, 1983.
- M.Sc. in Biomedical Eng., University of Texas at Austin, USA, 1984.
- M.Sc. in Neurology, University of Newcastle Upon Tyne, UK, 1991.
- Ph.D. in Electronic Eng., QMW, University of London, UK, 1992.
- Research interests: *eHealth, mHealth, eEmergency Systems, Connected Health; Medical Image Analysis Systems: MRI, Ultrasound, Endoscopy, Microscopy; Computational Intelligence and Explainable AI in Medical Systems; Biosignal Analysis: Electromyography; mHealth Interventions Based on X Reality Applications.*
- University of Cyprus, Department of Computer Science, *Professor*, since November 2007, *Associate Professor*, June 2001-October 2007, *Assistant Professor*, September 1996-May 2001; *Lecturer*, September 1993-August 1996; *Research Associate*, September 1992-August 1993.
- University of New Mexico, Department of Electrical and Computer Engineering, *Visiting Assistant Professor*, September 2000 – December 2001 (on sabbatical leave from the University of Cyprus).
- Cyprus Institute of Neurology and Genetics (CING), Department of Computational Intelligence, *Senior Scientist* 1992 - 2004. First employee, played an instrumental role to the Institute's growth and international reputation. Member of the Board of Directors since 2017.
- Marie Curie Fellowship, awarded in 1994 through the European Union on the topic of Image Processing in Histopathology.

II. Publications

- 125 journal publications; 41 papers published in *IEEE Access, TBE, TITB, TMI, TNN, TUFFC, J-BHI, RBE and IEEE Magazines*. 9 papers published in special issues on *Neural Networks, Medical Imaging, and eHealth Applications*.
- 30 book contributions.
- Co-Author of the book *Despeckle Filtering Algorithms and Software for Ultrasound Imaging*, Morgan & Claypool Publishers, CA, USA, 2008 & 2nd edition 2015.
- Co-Editor of the book *M-Health: Emerging Mobile Health Systems*, Springer, USA, 2006. Co-Editor of the book *Ultrasound and Carotid Bifurcation Atherosclerosis*, Springer, London, UK, 2012. Co-Editor of the handbook *Speckle Filtering and Tracking in Cardiovascular Ultrasound Imaging and Video*, The Institution of Engineering and Technology (IET), Stevenage, UK, 2018.
- Guest Co-Editor of 20 Special Issues, including the ones on *Computational Intelligence in Medical Systems*, in IEEE TITB in 2009, on *Citizen Centered e-Health Systems in a Global Healthcare Environment*, also in IEEE TITB in 2010, on *Biomedical Image Technologies and Methods*, in Computerized Medical Imaging and Graphics, in 2010, on *Citizen Centered e-Health Systems in a Global Healthcare Environment* in IEEE TITB in 2011, on *Cardiovascular Health Informatics: Risk Screening and Intervention*, in IEEE TITB in 2012, on *mHealth – Emerging Mobile Health Systems and Services*, in Healthcare Technology Letters in 2016 and on *Integrating Informatics and Technology for Precision Medicine*, in IEEE J-BHI in 2019.

- 18 conference proceedings editorial, including DSP93, DSP95, MEDICON98, IEEE MELECON2000, ITAB06, ITAB09, ISCCSP10, BIBE 2012, MEDICON2016, MELECON2016 and BHI2018.
- 232 conference papers published in refereed conference proceedings of IEEE EMBS, IEEE INNS, IEE, and other.
- Work cited extensively in international publications (according to Google Scholar more than **9600 citations with an h-index of 50**).

III. Research Grants

- Working in the development of medical diagnostic and mobile health systems for the last 30 years.
- Computer-aided diagnosis systems that provide a unique integration of a great variety of distinctly different technologies such as signal/image/video acquisition, preprocessing, feature extraction, dimensionality reduction, classification, and clinical decision making were developed. The reliability and robustness of the developed diagnostic systems is evident in their integration into clinical practice in several leading hospitals throughout the world. Furthermore, mHealth eEmergency systems were developed that led to the effective wireless communication of critical biosignals and ultrasound video through noisy channels. More specifically, the systems developed cover the following areas:
 - Ultrasound Imaging: An Integrated System for the Assessment of the Risk of Stroke
 - MRI: Quantitative Texture Analysis of Brain White Matter Lesions in Multiple Sclerosis. Assessment of Alzheimer's Disease Based on Texture Analysis of the Entorhinal Cortex.
 - Endoscopy Imaging: A CAD System for the Assessment of Gynaecological Cancer
 - Microscopy Imaging: Breast Cancer Biopsy image Analysis Support System (BASS) and Electron Microscopy (EM) Muscle Imaging System
 - Biosignal Analysis: Electromyographic (EMG) Signal Analysis for Neuromuscular Disorders
 - mHealth eEmergency Systems: Diagnostically Driven Efficient Video Compression Algorithms
 - mHealth Interventions Based on X Reality Applications for Patients with Dementia and Breast Cancer.
- **Total funds managed: 11,843,128 Euro (14,388,557 USD).**
Ongoing Research funds for the period 2016-present: 4,082,773 Euro (4,959,243 USD).

IV. Dissertation/Theses Supervision

- 16 Ph.D. and 53 M.Sc. students completed their studies. Currently, supervises a research team of 8 Ph.D. and 1 M.Sc. students.

V. Teaching Experience

- Graduate courses developed and taught: Data Mining, Artificial Intelligence (computational intelligence component), Visual Computing, Computer Vision, and Digital Video Processing.
- Undergraduate courses developed and taught: Image Processing, Computational Learning Systems, Microprocessor Systems, Computer Organization and Assembly Language Programming, and Digital Systems.

VI. Administrative Experience

- **Director of the Biomedical Engineering Research Centre**, Nov. 2020
- **Elected Dean of the School of Pure and Applied Sciences, University of Cyprus**, May 2008 – May 2011.
- Elected Vice-Chairperson of the Department of Computer Science, University of Cyprus, Nov. 2006 – Mar. 2008; Co-ordinator of the Undergraduate Program Committee, Department of Computer Science (2003 – Mar. 2008).
- Chairperson of the Senate Committee: Disciplinary Audit Committee (Academic), May 2008 – April 2011 and 2018 - 2020; Chairperson of the Ad-hoc Senate Committee on Encouraging Students to be More Active in Social Matters (2006 – 2007); Chairperson of the Senate Committee on Information Systems (2003 – 2004).
- Elected Member of the Board of the School of Pure and Applied Sciences (2003-2006).

VII. Professional Activities

- **Conference General Chair/Co-Chair of: BHI 2021: IEEE Biomedical and Health Informatics 2021, Athens, Greece, May, 2021. CAIP 2021: Computer Analysis of Images and Patterns, Cyprus, Sept. 29 - Oct. 1, 2021.** MECBME 2018: IEEE 4th Middle East Conference on Biomedical Engineering, Gammarth – Tunis, Tunisia. MEDICON 2016: XIV Mediterranean Conference on Medical and Biological Engineering and Computing, Cyprus, March 31st-April 2nd, 2016. MELECON'2016: IEEE Region 18th Mediterranean Electrotechnical Conference, Limassol, April 18-20, 2016. BIBE 2012, 12th IEEE International Conference on Bioinformatics and Bioengineering, 2012. ITAB 2009, IEEE Information Technology Applications in Biomedicine; Melecon 2000, IEEE Region 8 Mediterranean Conference on Information Technology and Electrotechnology, 2000; Medicon 1998: Mediterranean Conference on Medical and Biological Engineering and Computing, 1998; DSP95 and DSP&CAES93: International Conference on Digital Signal Processing, 1995 and 1993. Program Co-Chair of BHI 2018, ISCCSP 2010, and ITAB 2006. All conferences were co-organised and co-sponsored by the University of Cyprus and the IEEE.
- Founding Specialty Section Editor on Connected Health, *Frontiers Digital Health* (2020-).
- Associate editor for: *IEEE Journal of Biomedical and Health Informatics* (2013-), *IEEE Transactions on Information Technology in Biomedicine* (2000-2012), and *IEEE Transactions on Neural Networks* (2005-2007).
- Reviewer for: *IEEE Transactions on Biomedical Engineering, Image Processing, Signal Processing, and Engineering in Medicine & Biology Magazine; Medical and Biological Engineering and Computing; Journal of Intelligent Systems; IEEE EMBS, INNS, ICIP and ICASSP* conferences and other.
- Professional Societies Activities: **Fellow of the IEEE** (elected in 2018) **for contributions to the development of medical diagnostic and mobile health systems. Fellow of the International Academy of Medical and Biological Engineering (IAMBE)**, (elected in 2018) **in recognition of outstanding contributions to the field of Medical and Biological Engineering. Fellow of the European Alliance for Medical and Biological Engineering & Science (EAMBES)** (elected in 2018) **in recognition of distinguished leadership and important contributions to research and advocacy of Medical and Biological Engineering & Science. Fellow of Institute of Engineering Technology, FIET** (2011). IEEE EMBS Distinguished Lecturer (2013-2014). Served as President of the IEEE Cyprus Section 1998-2000, the Cyprus Association of Medical Physics and Biomedical Engineering (CAMPBE) 1996-1998, and the Cyprus Society of Medical Informatics (CSMI) 2012 - .

VIII. Invited Seminars and Presentations

- Invited seminars and presentations (70) on the topics of Cardiovascular Health Informatics: Predicting the Risk of Stroke Based on Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque, An Overview of M-Health Video Communication Systems, eEmergency Mobile Health Systems, Intelligent Systems on Biosignal Analysis and Medical Imaging, and were given to numerous international conferences, The Rayne Institute - King's College, Universities (Texas at Austin, Columbia, New Mexico, Torino, Groningen), and industry (Medelec Ltd, UK, and Cadwell Labs, USA).

TABLE OF CONTENTS

I. GENERAL INFORMATION	7
I.1 Personal Data.....	7
I.2 Research Interests.....	7
I.3 Education.....	7
I.4 Honours/Awards.....	8
I.5 Professional Experience	8
II. PUBLICATIONS	10
Summary numbers	10
II.1 Archived Journal Papers.....	10
II.2 Invited Book Contributions.....	21
II.3 Books.....	23
II.4 Editorial of Books	23
II.5 Editorial of Sections in Books.....	24
II.6 Editorial of Journal Special Issues	24
II.7 Editorial of Conference Proceedings.....	25
II.8 Papers Published in Refereed Conference Proceedings	27
II.9 Refereed Abstracts Published.....	48
III. RESEARCH GRANTS	55
III.1 Ongoing Research Projects for the Period 2016-present	55
III.2 Completed Research Projects for the Period 2011-2015	57
III.3 Completed Research Projects for the Period 2006-2010	59
III.4 Completed Research Projects for the Period 2001-2005	61
III.5 Completed Research Projects for the Period 1996-2000	63
III.6 Completed Research Projects for the Period 1986-1995	65
IV. DISSERTATION/THESES SUPERVISION	68
Summary Numbers	68
IV.1 PhD Dissertations	68
IV.2 MSc Theses	71
IV.3 Undergraduate Diploma Projects.....	75
V. TEACHING EXPERIENCE	76
V.1 Courses Taught	76
V.2 Short Courses Taught.....	77
V.3 Student Evaluations (Selected)	77
VI. ADMINISTRATIVE AND COMMITTEE WORK EXPERIENCE	79
VI.1 Department Committees	79
VI.2 School Committees.....	79
VI.3 University Committees	79
VI.4 Other Committees.....	80
VII. PROFESSIONAL ACTIVITIES	81
VII.1 Conference Activities	81
VII.2 Reviewer For	86
VII.3 Professional Societies Activities	89
VII.4 Project Evaluation, Reviewing, and Consulting.....	90
VIII. INVITED SEMINARS AND PRESENTATIONS	93
Summary Numbers	93

IX. REFERENCES	98
APPENDIX A RESEARCH STATEMENT	99
Part 1 – DEVELOPMENT OF MEDICAL DIAGNOSTIC SYSTEMS	99
A.1 Development of medical diagnostic and mobile health systems.....	99
Ultrasound image analysis of the atherosclerotic carotid plaque for the assessment of the risk of stroke	99
Mobile eHealth systems in the provision of advanced eEmergency services.....	99
A.2 Ongoing and Future Work	99
Explainable Models for Personalised Integrated Stroke Ultrasound Video Analysis..	99
Normal Appearing Brain White Matter Changes in Relapsing Multiple Sclerosis in Serial MRI Scans	100
Extracting Explainable Assessments of Alzheimer’s disease via Machine Learning on brain MRI imaging.....	100
Physical Training for People with Dementia in Confined Mental Health Units.....	100
Part 2 – ESTABLISHING THE BIOMEDICAL ENGINEERING RESEARCH CENTRE (BERC)	101
A.3 Executive Summary	101
APPENDIX B SELECTED PUBLICATIONS	102
J.1	A.S. Panayides, M.S. Pattichis, M. Pantziaris, A.G. Constantinides, C.S. Pattichis, <i>The Battle of the Video Codecs in the Healthcare Domain-A Comparative Performance Evaluation Study Leveraging VVC and AV1</i> , IEEE Access , vol. 8, pp. 11469-11481, 2020. DOI: 10.1109/ACCESS.2020.2965325 .
J.2	S. Leandrou, D. Lamnisis, I. Mamais, P. Kyriacou, C. S. Pattichis, <i>Assessment of Alzheimer's Disease Based on Texture Analysis of the Entorhinal Cortex</i> , Frontiers in Aging Neuroscience , vol. 12, Article 176, pp. 1-12, 2020. https://doi.org/10.3389/fnagi.2020.00176 .
J.3	A.S. Panayides, M. S. Pattichis, S. Leandrou, C. Pitris, A. Constantinidou, and C.S. Pattichis, <i>Radiogenomics for Precision Medicine with A Big Data Analytics Perspective</i> , IEEE Journal of Biomedical and Health Informatics , vol. 23, no. 5, pp. 2063-2079, 2019. DOI: 10.1109/JBHI.2018.2879381 .

I. GENERAL INFORMATION

I.1 Personal Data

Name: Constantinos S. Pattichis

ORCID ID: 0000-0003-1271-8151

Date of birth: January 30, 1959

Nationality: Cypriot

Marital status: Married, three children

Hobbies: Reading, Music, Philately

Business address: Department of Computer Science
University of Cyprus
Kallipoleos 75,
P.O. Box 20537, CY 1678 Nicosia, Cyprus
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E-mail: pattichi@ucy.ac.cy
Website: <http://www.ehealthlab.cs.ucy.ac.cy/>
Google Scholar:
<https://scholar.google.com/citations?user=XPzbiZUAAAAJ&hl=en>
ResearchGate: https://www.researchgate.net/profile/C_Pattichis

Home address: 6, Gerasimou str., Strovolos, 2040 Nicosia, Cyprus

I.2 Research Interests

- eHealth, mHealth, eEmergency Systems, Connected Health
- Medical Image Analysis Systems: MRI, Ultrasound, Endoscopy, Microscopy
- Computational Intelligence and Explainable AI in Medical Systems
- Biosignal Analysis: Electromyography
- mHealth Interventions Based on X Reality Applications

I.3 Education

- *Doctor of Philosophy in Electronic Engineering*
University of London, Queen Mary and Westfield College, UK,
Dissertation: Artificial Neural Networks in Clinical Electromyography
Topics: Neural Networks, Signal Processing, Pattern Recognition
March 1992
- *Master of Science in Neurology, Faculty of Medicine*
Thesis: A Morphological Analysis of the Macro Motor Unit Potential
University of Newcastle Upon Tyne, UK, May 1991
- *Master of Science in Biomedical Engineering*
Minor: Computer Engineering
Thesis: Reliability and Accuracy of the Thermodilution and Impedance

Cardiography Methods in the Measurement of Cardiac Output
University of Texas at Austin, USA, December 1984

- *Bachelor of Science in Electrical Engineering*
Major: Computer Engineering
University of New Brunswick, Canada, May 1983
- *Diploma of Technician Engineer in Electrical Engineering*
Higher Technical Institute (HTI), Cyprus, July 1979
- Languages: Greek, English

I.4 Honours/Awards

- Best Paper Award (co-author),
3rd IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI), Athens, Greece, 7-9 June, 2006 (conference paper C.103, and journal paper J.35)
- Student's Best Paper Presentation Award (co-authored with PhD student C. Christodoulou),
International Joint Conference on Neural Networks, IJCNN'99, Washington DC, 10-16 July, 1999 (conference paper C.51, and journal paper J.24)
- Marie Curie Fellowship,
International Scientific Cooperation Initiative, Commission of the European Communities
Image Processing in Histopathology, 1994
- Rotary International Scholarship,
University of Newcastle Upon Tyne, 1987-1988
- Research Assistant Scholarship, University of Texas at Austin, 1984
- Achievement of Academic Excellence, Faculty of Engineering,
University of New Brunswick, 1983
- Certificate of Merit, Higher Technical Institute, 1979

I.5 Professional Experience

University of Cyprus

Department of Computer Science
November 2007 -
Professor

University of Cyprus

Department of Computer Science
June 2001 – October 2007
Associate Professor

University of New Mexico

Department of Electrical and Computer Engineering
September 2000 – December 2001
Visiting Assistant Professor, on sabbatical leave from the University of Cyprus

University of Cyprus

Department of Computer Science
September 1996 – May 2001
Assistant Professor

University of Cyprus

Department of Computer Science
September 1993 -August 1996
Lecturer

University of Cyprus

Department of Computer Science
September 1992 - August 1993
Research Associate

**The Cyprus Institute of Neurology and Genetics
(The Muscular Dystrophy Research Trust of Cyprus)**

Department of Computer Systems Research
October 1988 - August 1992, *Senior Research Scientist (full time employed)*
September 1992 - December 2004, *Senior Scientist (collaborator)*
January 2009 - December 2017, *Visiting Research Scientist*

Higher Technical Institute

Department of Computer Studies
October 1988 - June 1992
Visiting Lecturer

Intercollege

Department of Computer Science
September 1986 - June 1989
Visiting Lecturer

University of Newcastle Upon Tyne

Newcastle General Hospital
Department of Clinical Neurophysiology
October 1987 - September 1988
Research Assistant

Muscular Dystrophy Research Trust of Cyprus

Department of Clinical Neurophysiology
April 1986 - September 1987
Research Associate

Cyprus Pharmaceutical Organization

Department of Medical Engineering
January 1985 - March 1986
Service Engineer

University of Texas at Austin

Department of Electrical and Computer Engineering
June 1984 - December 1984
Teaching Assistant

II. PUBLICATIONS

Summary numbers

II.1 Archived Journal Papers	125
II.2 Invited Book Contributions.....	30
II.3 Books	3
II.4 Editorial of Books	3
II.5 Editorial of Sections in Books	1
II.6 Editorial of Journal Special Issues	21
II.7 Editorial of Conference Proceedings	18
II.8 Papers Published in Refereed Conference Proceedings.....	232
II.9 Refereed Abstracts Published	69

For Google-Scholar citations see:

<https://scholar.google.com/citations?user=XPzbiZUAAAAJ&hl=el>

More than 9600 citations, an h-index of 50 and an i10-index of 161.

II.1 Archived Journal Papers

- J.1 C.S. Pattichis, and L.E. Baker, *A Comparison of the Tehrmodilution and Impedance Cardiography Methods in the Measurement of Cardiac Output*, **Innovation and Technology in Biology and Medicine**, Vol. 15, No. 1, pp. 114-121, 1994.
- J.2 C.N. Schizas, C.S. Pattichis, S. Michaelides, *Forecasting Minimum Temperature with short time-length Data using Artificial Neural Networks*, **Neural Networks World**, VSP, Vol. 4, No. 2, pp. 219-230, 1994.
- J.3 C.N. Schizas, C.S. Pattichis, C.A. Bonsett, *Medical Diagnostic Systems: A Case for Neural Networks*, **Technology and Health Care**, Vol. 2, pp. 1-18, 1994.
- J.4 C.S. Pattichis, C.N. Schizas, G. Gabriel, *Quantitative Morphological Analysis of Muscle Biopsies Using Artificial Neural Networks*, **Innovation and Technology in Biology and Medicine**, Vol. 15, No. 5, pp. 546-556, 1994.
- J.5 C.S. Pattichis, C.N. Schizas, L. Middleton, *Neural Network Models in EMG Diagnosis*, **IEEE Transactions on Biomedical Engineering**, Vol. 42, No. 5, pp. 486-496, 1995.
- J.6 C. Pattichis, C. Charalambous, L. Middleton, *Efficient Training of Neural Network Models in the Classification of Electromyographic Data*, **Medical & Biological Engineering & Computing**, Special Issue on Electrophysiological Modeling, Vol. 33, No. 3, pp. 499-503, 1995.
- J.7 C.S. Pattichis, and C.N. Schizas, *Genetics-Based Machine Learning Models for the Diagnosis of Certain Neuromuscular Disorders*, **IEEE Transactions on Neural Networks**, Vol. 7, No. 2, pp. 427-439, 1996.

- J.8 F. Schnorrenberg, C.S. Pattichis, K. Kyriacou, M. Vassiliou, C.N. Schizas, *Computer-aided Classification of Breast Cancer Nuclei*, **Technology and Health Care**, Vol. 4, No. 2, pp. 147-161, 1996.
- J.9 C.N. Schizas, C.S. Pattichis, *Learning Systems in Biosignal Analysis*, **Biosystems**, Vol. 41, pp. 105-125, 1997.
- J.10 F. Schnorrenberg, C.S. Pattichis, K.C. Kyriacou, C.N. Schizas, *Computer-Aided Detection of Breast Cancer Nuclei*, **IEEE Transactions on Information Technology in Biomedicine**, Vol. 1, No. 2, pp. 128-140, 1997.
- J.11 C.I. Christodoulou, C.S. Pattichis, W.F. Fincham, *A Modular Neural Network Decision Support System in EMG Diagnosis*, **Journal of Intelligent Systems**, Special Issue on Computational Intelligent Diagnostic Systems in Medicine, Vol. 8, No. 12, pp. 99-143, 1998.
- J.12 C.I. Christodoulou, C.S. Pattichis, *Unsupervised Pattern Recognition for the Classification of EMG Signals*, **IEEE Transactions on Biomedical Engineering**, Vol. 46, No. 2, pp. 169-178, 1999.
- J.13 C.S. Pattichis, M.S. Pattichis, *Time-Scale Analysis of Motor Unit Action Potentials*, **IEEE Transactions on Biomedical Engineering**, Vol. 46, No. 11, pp. 1320-1329, 1999.
- J.14 C.S. Pattichis, A. Elias, *Autoregressive and Cepstral Analysis of Motor Unit Action Potentials*, **Medical Engineering & Physics**, Special Issue on Intelligent Data Analysis in Electromyography and Electroneurography, Vol. 21, No. 6/7, pp. 405-419, 1999.
- J.15 P.A. Panayiotou, D. Jenkins, C.S. Pattichis, F. Plimmer, *Computer Assisted Valuation: Multiple Regression Analysis in Cyprus*, **Journal of Tax Assessment & Administration**, Vol. 4, No. 2, pp. 27-51, 1999.
- J.16 P.A. Panayiotou, C.S. Pattichis, D. Jenkins, F. Plimmer, *A Modular Artificial Neural Network Valuation System*, **Journal of Tax Assessment & Administration**, Vol. 4, No. 3, pp. 17-29, 1999.
- J.17 C.S. Pattichis, I. Schofield, P. Fawcett, *A Morphological Analysis of the Macro Motor Unit Potential*, **Medical Engineering and Physics**, Vol. 21, No. 10, pp. 673-679, 1999.
- J.18 M.S. Pattichis, C.S. Pattichis, M. Avraam, A. Bovik, K. Kyriacou, *AM-FM Texture Segmentation in Electron Microscopic Muscle Imaging*, **IEEE Transactions on Medical Imaging**, Vol. 19, No. 12, pp. 1253-1258, 2000.
- J.19 F. Schnorrenberg, C.S. Pattichis, K. Kyriacou, C.N. Schizas, *Content-based Retrieval of Breast Cancer Biopsy Slides*, **Technology and Health Care**, Vol. 8, pp. 291-297, 2000.
- J.20 C. Michaelides, C.S. Pattichis, G. Kleovoulou, *Classification of Rainfall Variability Using Artificial Neural Networks*, **International Journal of Climatology**, Vol. 21, pp. 1401-1414, 2001.
- J.21 A. Pitsillides, G. Stylianou, C.S. Pattichis, A. Sekercioglu, T. Vassilakos, *Bandwidth Allocation for Virtual Paths (BAVP): Investigation of Performance of Classical Constrained and Genetic Algorithm Based Optimisation Techniques*, **Journal on Computer Communications**, Special Issue On Computational Intelligence In Telecommunications Networks, Vol. 25, No. 16, pp. 1443-1453, 2002.

- J.22 C.S. Pattichis, C.N. Schizas, A. Andreou, *Healthcare Telematic Applications in Cyprus*, **Methods of Information in Medicine**, Vol. 41, pp. 376-381, 2002.
- J.23 E. Kyriacou, P. Sotiris, A. Berler, M. Neophytou, A. Bourka, A. Georgoulas, A. Anagnostaki, D. Karayiannis, C. Schizas, C. Pattichis, A. Andreou, D. Koutsouris, *Multi-purpose HealthCare Telemedicine Systems with Mobile Communication Link Support*, **BioMedical Engineering OnLine**, [online], Vol. 2, No. 7, 2003, DOI 10.1186/1475-925x-2-7. Most accessed paper with more than 58000 hits.
- J.24 C.I. Christodoulou, C.S. Pattichis, M. Pantziaris, A. Nicolaidis, *Texture-Based Classification of Atherosclerotic Carotid Plaques*, **IEEE Transactions on Medical Imaging**, Vol. 22, No. 7, pp. 902-912, 2003.
- J.25 C.I. Christodoulou, S. Michaelides, C.S. Pattichis, *Multi-Feature Texture Analysis for the Classification of Clouds in Satellite Imagery*, **IEEE Transactions on Geoscience and Remote Sensing**, Vol. 41, No. 11, pp. 2662- 2668, 2003.
- J.26 L. Eleftheriou, E. Zamba-Papanicolaou, M. Pantziaris, T. Kyriakides, S. Papacostas, P. Myrianthopoulou, C.S. Pattichis, I. Iliopoulos, C. Piperidou, *Click Evoked Neurogenic Vestibular Potentials (NVESTEPS): A Method of Assessing the Function of the Vestibular System*, **Electromyography and Clinical Neurophysiology**, Vol. 43, pp. 399-408, 2003.
- J.27 L. Eleftheriou, E. Zamba-Papanicolaou, M. Pantziaris, K. Kleopas, T. Kyriakides, S. Papacostas, C.S. Pattichis, I. Iliopoulos, C. Piperidou, *Neurogenic Vestibular Potentials using a Tone Pip Auditory Stimulus*, **Electromyography and Clinical Neurophysiology**, Vol. 44, pp. 167-173, 2004.
- J.28 Y. Poirazi, C. Neokleous, C.S. Pattichis, C.N. Schizas, *A Neural Network Architecture Inspired From the Modular Organization of the Cerebral Cortex*, **IEEE Transactions on Neural Networks**, Vol. 15, No. 3, pp. 597-612, 2004.
- J.29 C. Loizou, C.S. Pattichis, C. Christodoulou, R. Istepanian, M. Pantzaris, A. Nicolaidis, *Comparative Evaluation of Despeckle Filtering in Ultrasound Imaging of the Carotid Artery*, **IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control**, Vol. 52, No. 10, pp. 1653-1669, 2005.
- J.30 S. K. Kakkos, A. N. Nicolaidis, E. Kyriacou, C. S. Pattichis, G. Geroulakos, *Effect of Zooming on Texture Features of Ultrasonic Images*, **Cardiovascular Ultrasound**, [online], Vol. 4, No. 1(8), 10 pages, 2006, Available at: <http://www.cardiovascularultrasound.com/content/4/1/8>.
- J.31 C. Loizou, C.S. Pattichis, M. Pantzaris, T. Tyllis, A. Nicolaidis, *Quality Evaluation in Ultrasound Imaging of the Carotid Artery Based on Normalization and Speckle Reduction Filtering*, **Medical & Biological Engineering & Computing**, Vol. 44, No. 8, pp. 405-413, 2006.
- J.32 C. Loizou, C.S. Pattichis, M. Pantzaris, T. Tyllis, A. Nicolaidis, *Intima Media Segmentation Of The Carotid Artery Bifurcation*, **Medical & Biological Engineering & Computing**, Vol. 45, No. 1, pp. 35-49, 2007. Available at: <http://www.springerlink.com/content/261359x781871552/>.
- J.33 A. Jossif, C.S. Pattichis, M. Kyriakides, A. Pitsillides, E. Kyriakou, M. Dikaiakou, *Selected eHealth Applications in Cyprus from the Training Perspective*, **Methods of Information in Medicine**, Vol. 46, No. 1, pp. 84-89, 2007.

- J.34 S.K. Kakkos, J.M. Stevens, A.N. Nicolaides, E. Kyriacou, C.S. Pattichis, G. Geroulakos, D. Thomas, *Texture Analysis of Ultrasonic Images of Symptomatic Carotid Plaques Can Identify Those Plaques Associated with Ipsilateral Embolic Brain Infarction*, **European Journal of Vascular and Endovascular Surgery**, Vol. 33, No. 4, pp. 422-429, 2007.
- J.35 C.A. Nicolaou, N. Brown, C.S. Pattichis, *Molecular Optimization Using Computational Multi-Objective Methods*, **Current Opinion in Drug Discovery & Development**, Vol. 10, No. 3, pp. 316-324, 2007.
- J.36 C. Loizou, C.S. Pattichis, M. Pantzaris, T. Tyllis, A. Nicolaides, *Plaque Segmentation of the Carotid Artery Bifurcation*, **IEEE Transactions on Information Technology in Biomedicine**, Vol. 11, No. 6, pp. 661-667, 2007.
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3. **Handbook of Speckle Filtering and Tracking in Cardiovascular Ultrasound Imaging and Video**, Ed. by C.P. Loizou, C.S. Pattichis and J. D'hooge, The Institution of Engineering and Technology (IET), Stevenage, UK, 2018. 704 pages. ((This volume consists of 31 chapters organised under the following four sections: Section 1 *Introduction to Speckle Noise in Ultrasound Imaging and Video*, Section 2 *Speckle Filtering*, Section 3 *Speckle Tracking*, and Section 4 *Selected Applications*.)

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III. RESEARCH GRANTS

Summary Numbers²

III.1 Ongoing Research funds for the period 2016-present	4,307,183 Euro
III.2 Research funds for the period 2011-2015	2,181,919 Euro
III.3 Research funds for the period 2006-2010	3,763,269 Euro
III.4 Research funds for the period 2001-2005	790,089 Euro
III.5 Research funds for the period 1996-2000	628,693 Euro
III.6 Research funds for the period 1986-1995	396,385 Euro
<u>TOTAL AMOUNT OF RESEARCH FUNDS MANAGED</u>	<u>12,067,538 Euro</u>
	<u>14,427,804 USD³</u>

III.1 Ongoing Research Projects for the Period 2016-present

- F.1** *X-eHealth: eXchanging electronic Health Records in a commom framework*
 Co-Investigator
 H2020-SC1-DTH-2019-2. SC1-HCC-07-2020 - Support for European eHealth Interoperability roadmap for deployment.
 Sep. 2020 – Aug. 2022
 Funding: 2,999,980 Euro (UCY 63,375 Euro)
- F.2** *Digital Tools and Methods for Safe Transfer Techniques for Caregivers in Today's Health Care Sector (STTech)*
 Co-Investigator
 EU Erasmus+
 Sep. 2020 – Aug. 2022
 Funding 249,803 Euro (RISE 40,972 Euro)
- F.3** *Chatbots Enhance personalised European Healthcare Curricula (CEPEH)*
 Co-Investigator
 EU Erasmus+
 Sep. 2019 – Aug. 2022
 Funding 314,685 Euro (RISE 92,310 Euro)
- F.4** *Integrated National eHealth Ecosystem (eHealth4U)*
 Co-PI
 Research Promotion Foundation, Cyprus
 Restart 2016-2020 – Integrated Projects
 Jul. 2019 – Jan. 2022
 Funding: 1,000,000 Euro (UCY 423,360 Euro)

² Total project funding was used when computing summary research funds when PI or Co-PI.

³ The Apr. 14th, 2021 Euro to USD rate was used.

- F.5** *Safe, Efficient and Integrated Indoor Robotic Fleet for Logistic Applications in Healthcare and Commercial Spaces (ENDORSE)*
 Co-Investigator
 H2020-MSCA-RISE-2018 (Marie Skłodowska-Curie Research and Innovation Staff Exchange)
 Oct. 2018 – Sep. 2021
 Funding: 1,122,400 Euro (UCY 110,400 Euro)
- F.6** *Stay on Track: a web platform to help with adhering to prescribed medication (Stay-On-Track)*
 Co-PI
 Research Promotion Foundation, Cyprus
 Programme: Social Innovation, SOCIALINNO/0617/0014
 Oct. 2018 – Sep. 2021
 Funding: 100,000 Euro
- F.7** *Adaptive Video Control for Real-time Mobile Health Systems and Services (ACTRESS)*
 Co-PI
 Research Promotion Foundation, Cyprus
 Restart 2016-2020
 Sept. 2018 – Aug. 2020
 Funding: 160,000 Euro (UCY 30,000 Euro)
- F.8** *Co-creation of Virtual Reality re-usable e-resource for European Healthcare Education (CoViRR)*
 Co-Investigator
 EU Erasmus+
 Sep. 2018 – Aug. 2021
 Funding 314,685 Euro (RISE 78,100 Euro)
- F.9** *Joint Action supporting the eHealth Network (eHAction)*
 Co-Investigator
 European Union's Health Programme (2014-2020) Grant Agreement n° 801558
 June 2018 - May 2021
 Funding: 2,699,989 Euro (UCY 161,035 Euro)
- F.10** *Research centre on Interactive media, Smart systems and Emerging technologies (RISE)*
 Co-Investigator (Co-Leader MRG 7 Smart, Ubiquitous, and Participatory Technologies for Healthcare Innovation)
 EU H2020-WIDESPREAD-01-2016-2017-Teaming Phase 2
 Nov. 2017 – Oct. 2024
 Funding: 14,999,790 Euro (416,000 Euro for MRG7) (UCY 463,271 Euro)
- F.11** *Cyprus Electronic Exchange of Social Security*
 PI
 EU Innovation and Networks Executive Agency (INEA)
 Department C - Connecting Europe Facility (CEF)
 Unit C4 Energy & ICT [2017-CY-IA-0016]:
 Mar. 2018 – Feb. 2020

Funding: 1,186,197 Euro (UCY 463,952 Euro)

F.12 *Integrated Precision Medicine Technologies Research Centre of Excellence (IPMT)*

PI

EU H2020-WIDESPREAD-04-2017-Teaming Phase 1

Sept. 2017 – Aug. 2018

Funding: 399,999 Euro (UCY 140,287 Euro)

F.13 *Deployment of Generic Cross Border eHealth Services in Cyprus*

PI

EU Innovation and Networks Executive Agency (INEA)

Department C - Connecting Europe Facility (CEF)

Unit C4 Energy & ICT [2015-CY-IA-0095]:

Jan. 2017 – Dec. 2020

Funding: 593,356 Euro (UCY 445,017 Euro)

F.14 *eHealth Eurocampus*

Co-Investigator

EU ERASMUS+ PROGRAMME

Strategic Partnerships - Key Action 2

AGREEMENT NUMBER 2016-1-FR01-KA203-023932

Sept. 2016 – Aug. 2019

Funding: 35,439 Euro

III.2 Completed Research Projects for the Period 2011-2015

F.15 *Future Internet Social and Technological Alignment Research (FI-STAR): Electronic Health Record Application Support Service Enablers (EHR-EN)*

Co-PI

EU FP7 THEME Future Internet ICT: 604691 [FI.ICT-2011.1.8]:

April 2014 – September 2015

Funding: 121,120 Euro

F.16 *Future Education and Training in Computing: How to support learning at anytime anywhere*

Co-PI

EU Lifelong Learning Programme: 539461-LLP-1-2013-1-BG-ERASMUS-ENW

November 2013 – October 2015

Funding: 12,000 Euro

F.17 *New e-Health Services For The European Reference Network on rare anaemias (eEnerca)*

Co-Investigator

EU EAHC Health Program - The executive agency for Health and Consumers, Jan. 2014 –

Sept. 2016, Funding 166,524 Euro

F.18 *Development of a Breast Cancer Density Specific Computer Aided Detection System*

Co-PI

Research Promotion Foundation, Cyprus

Program for Research and Technological Development 2009-2010

February 2013 – February 2015

Funding: 139,700 Euro

- F.19** *Investigation of Type 2 Diabetes susceptibility loci in the Cypriot population*
Co-Investigator
Research Promotion Foundation, Cyprus
Program for Research and Technological Development 2009-2010
Sept. 2010 – Sept. 2013
Funding: 139,700 Euro (University of Cyprus budget: 20,000 Euro)
- F.20** *A Next-Generation, Secure Linked Data Medical Information Space for Semantically-Interconnecting Electronic Health Records and Clinical Trials Systems Advancing Patients Safety in Clinical Research (Linked2Safety)*
Co-Investigator
FP7-ICT-2011-7
Oct. 2011-Sept. 2014
Funding: 560,600 Euro
- F.21** *A Social Collaborative Working Space Semantically Interlinking Biomedical Researchers, Knowledge and Data for the Design and Execution of in-silico Models and Experiments in Cancer Chemoprevention (GRANATUM)*
Co-Investigator
EU FP7 ICT-2009.5.3: Virtual Physiological Human
Feb. 2011-Jul. 2013
Funding: 330,000 Euro
- F.22** *Long Lasting Memories*
Co-Investigator
EU FP7 ICT PSP Theme : ICT for ageing well with cognitive problems, combining assistive and independent living technologies
Apr. 2010-Nov. 2011
Funding: 349,590 Euro
- F.23** *Multi-type Content Repurposing and Sharing in Medical Education (mEducator)*
Co-Investigator
EU FP7 eContentplus Programme
Best Practice Network
May 2009-Apr. 2012
Funding: 281,250 Euro
- F.24** *Collaborative Research: Design, Implementation and Dissemination of Multidisciplinary online Java Digital Signal Processing (J-DSP)*
Co-Investigator
NSF, USA (multidisciplinary CCLI phase 3)
August 2008 – August 2013
Funding: 11,380 Euro
- F.25** *Quantitative and Qualitative Analysis of Brain White Matter Lesions in Multiple Sclerosis Subjects*
Co-Investigator
Research Promotion Foundation, Cyprus
Program for Research and Technological Development 2008
December 2008 – January 2011
Funding: 129,775 Euro
- F.26** *Real time Wireless Transmission of Medical Ultrasound Video*
Principal Investigator
Research Promotion Foundation, Cyprus

Program for Research and Technological Development 2008
 December 2008 – November 2010
 Funding: 59,980 Euro

III.3 Completed Research Projects for the Period 2006-2010

- F.27** *A Computer Aided Diagnostic tool in Gynaecological Endoscopy (CAD_Gen)*
 Co-Principal Investigator
 Ministry of Commerce and Industry, Cyprus
 Call for High Technology and Innovative Incubator Companies
 May 2008 – Oct. 2010
 Funding: 224,525 Euro
- F.28** *Mobile and Robotised Telemedicine for Emergency Vehicle (MARTE-III)*
 Principal Investigator
 Research Promotion Foundation, Cyprus
 Program for Bilateral Cooperation: Cyprus-France 2007-2009
 May 2008 – April 2010
 Funding: 12,520 Euro
- F.29** *LifeQ*
 Co-Investigator
 Ministry of Commerce and Industry, Cyprus
 Call for High Technology and Innovative Incubator Companies
 May 2007 – April 2009
 Funding: 224,525 Euro
- F.30** *Investigating Disease Associated Gene-Gene Interactions: A Distributed Complete two SNP Interaction Analyses Framework*
 Principal Investigator
 Glaxo Smith Klime, UK
 December 2007 – November 2009
 Funding: 98,900 Euro
- F.31** *A Mediterranean network for Higher and Continuing Medical Education Resources (WideMEDnet)*
 Principal Investigator
 EU European Regional Development Fund
 INTERREG III B Archimed
 November 2008 – December 2008
 Funding: 481,318 Euro (for the University of Cyprus: 158,242 Euro)
- F.32** *Wireless Microsensors for the Detection of Cardiac Diseases*
 Principal Investigator
 Research Promotion Foundation, Cyprus
 Program for Research and Technological Development 2005-2007
 December 2006 – December 2008
 Funding: 183,320 Euro
- F.33** *Multimodal Biometric Security System*
 Co-Investigator
 Research Promotion Foundation, Cyprus
 Program for Research and Technological Development 2005-2007
 December 2006 – December 2008

Funding: 59,210 Euro

F.34 *A Mediterranean Research and Higher Education Intranet in Medical and Biological Sciences (IntraMEDnet)*

Principal Investigator

EU European Regional Development Fund

INTERREG III B Archimed

June 2006 – November 2008

Funding: 1,233,940 Euro (for the University of Cyprus 340,708Euro)

F.35 *An INTEGRated broadband telecommunication pilot teleservices-platform for improving health care provision in the Region of MEDiterranean*

Co-Investigator

EU European Regional Development Fund

INTERREG III B Archimed

June 2006 – March 2007

Funding: 197,388 Euro

F.36 *East Mediterranean Cohesion on Information and Telecommunications*

Co-Investigator

EU European Regional Development Fund

INTERREG III B Archimed

June 2006 – March 2007

Funding: 61,162 Euro

F.37 *Accident Prediction Early Warning System*

Principal Investigator

Research Promotion Foundation, Cyprus

Program Expatriate Researchers 2003-2005

September 2006 – August 2008

Funding: 82,345 Euro

F.38 *The Network Digital Video Surveillance Project*

Co-Investigator

Ministry of Commerce and Industry, Cyprus

Call for High Technology and Innovative Incubator Companies

April 2006 – April 2008

Funding: 224,525 Euro

F.39 *Intraoperative Computer Assisted Tissue Image Analysis (CATIA)*

Co-Principal Investigator

Research Promotion Foundation, Cyprus

PENEK/KIN 2005, Program for the Financial Support of New Researchers

March 2006 – February 2008

Funding: 118,896 Euro

F.40 *Video Segmentation and Motion Analysis of the Atherosclerotic Carotid Plaque in Ultrasound Imaging (VISEMA)*

Co-Principal Investigator

Research Promotion Foundation, Cyprus

Program Hosting an Expatriate Researcher

February 2006 – January 2007

Funding: 62,066 Euro

F.41 *Surface EMG Diagnostic System Based on Statistical and Modelling*

Principal Investigator
 Research Promotion Foundation, Cyprus
 Program for Bilateral Cooperation: Cyprus-Slovenia 2003-2005
 December 2005 – November 2007
 Funding: 18,056 Euro

F.42 *Advanced Telecommunication System for the Direct and Automated Notification of Volunteer Blood Donors*

Principal Scientific Investigator
 Research Promotion Foundation, Cyprus
 Program for Research and Technological Development 2005-2007
 September 2005 – August 2008
 Funding: 213,460 Euro

F.43 *Development of Knowledge-based Visual Attention Models for Perceptual Video Coding*

Principal Investigator
 Research Promotion Foundation, Cyprus
 Program for Research and Technological Development 2003-2005
 September 2005 – August 2007
 Funding: 141,905 Euro

F.44 *Network for Future Regional Health Care / Future Health*

Co-Investigator
 European Regional Development Fund
 INTERREG III C North zone
 January 2004 – December 2006
 Funding: 59,098 Euro

F.45 *Network of Excellence on Virtual Reality and Virtual Environments Applications for Future Workspaces (INTUITION)*

Co-Investigator
 European Commission, DG for Information Society Technologies
 Integrating and Strengthening the ERA
 October 2004 – September 2006
 Funding: 17,530 Euro

F.46 *Mobile and Robotised Telemedicine for Emergency Vehicle (MARTE)*

Principal Investigator
 Research Promotion Foundation, Cyprus
 Program for Bilateral Cooperation: Cyprus-France 2003-2005
 September 2004 – August 2006
 Funding: 10,520 Euro

F.47 *SEEAchWeb: An Interactive Web-based Forum of Southeastern European Archaeology*

Co-Investigator
 MINERVA Programme
 October 2003 – September 2006
 Funding: 38,060 Euro

III.4 Completed Research Projects for the Period 2001-2005

F.48 *Exploratory Investigation in the Analysis of High Dimensional SNPs Data*

Principal Investigator
 Glaxo Smith Klime, UK

December 2004 – December 2005
Funding: 90,640 Euro

F.49 *Integrated System for the Evaluation of Ultrasound Imaging of the Carotid Artery (TALOS)*

Co-Principal Investigator
Research Promotion Foundation, Cyprus
Program for Research and Technological Development 2003-2005
January 2004 – December 2005
Funding: 87,440 Euro

F.50 *Integrated System for the Digital Analysis of Endoscopic Imaging Macrobiopsy for the Support of the Diagnosis of Gynaecological Cancer (IPPOKRATIS)*

Principal Investigator
Research Promotion Foundation, Cyprus
PENEK 2002, Program for the Financial Support of New Researchers
December 2002 – November 2004
Funding: 65,785 Euro

F.51 *Electronic Journeys: A Case for The Cyprus Educational & Cultrural System (Avli tou Evagora)*

Co- Investigator
Ministry of Education and Culture, Cyprus Telecommunications
Authority, and University of Cyprus, Cyprus
September 2002 – December 2004
Funding: 280,645 Euro

F.52 *Integrated System for the Support of the Diagnosis for the Risk of Stroke (IASIS)*

Principal Investigator
Research Promotion Foundation, Cyprus
5th Annual Program for the Financing of Research Projects
December 2002 – November 2005
Funding: 102,438 Euro

F.53 *European Computing Education and Training (ECET)*

Co- Investigator
European Commission, DG for Education and Culture
Socrates Programme
October 2001 – September 2004
Funding: 17,546 Euro

F.54 *Image Processing of Hyperspectral Satellite Imagery*

Co- Investigator
Ball Aerospace & Technologies Corp. Systems Engineering
Operations, USA
July 2001 – December 2001
Funding: 8,330 Euro

F.55 *Quantitative Analysis of Chest Radiographs*

Co- Investigator
KESTREL Corporation, USA, Biomedical Imaging Division
National Institute for Occupational Safety and Health (NIOSH)
Grant 2R44 OHRRGM 03595.
January 2001 – August 2002
Funding: 28,510 Euro

F.56 *Neurological and Genetic Networking of the two Communities (NeuroNet)*

Principal Investigator
 United Nations Office for Project Services (UNOPs)
 January 2001 - December 2002
 Funding: 108,755 Euro

III.5 Completed Research Projects for the Period 1996-2000**F.57 *Health Telematics Services Based on the WAP Protocol***

Co-Principal Investigator
 Planning Bureau, Cyprus/General Secretariat of Research and
 Technology, Greece
 October 2000 – March 2002
 Funding: 8,770 Euro

F.58 *Remote Medical Education via Internet Enhanced Services (REMEDIES LEONARDO EL/00/B/F/PP-1114019)*

Co- Investigator
 European Commission, DG XXII
 Leonardo Da Vinci Programme
 January 2000 – Decemeber 2001
 Funding: 17,540 Euro

F.59 *Health Telematics*

Principal Investigator
 University of New Mexico
 High Performance Computing Education & Research Center
 September 2000 – August 2001
 Funding: 27,626 Euro

F.60 *Software and Hardware for the Digital Systems Laboratory of UNM*

Co-Principal Investigator
 Xilinx Corporation, USA
 September 2000 – August 2001
 Funding: 26,665 Euro

F.61 *Continuing Professional Development Concerning General Practicioners (PROPRACTITION)*

Co- Investigator
 European Commission, DG XXII
 Leonardo Da Vinci Programme
 December 1999 – June 2001
 Funding: 13,156 Euro (Total budget 139,305 Euro)

F.62 *Acquisition, Transmission and Compilation of Digital Sound and Image in Medical Practice (TELEPATHOLOGY)*

Co- Investigator
 European Commission, DG XXII
 Leonardo Da Vinci Programme
 December 1999 – June 2001
 Funding: 6,130 Euro (Total budget 136,555 Euro)

- F.63** *Gynecological Cancer Diagnostic Telepathology and Teleconsultation Network (TELEGYN)*
Principal Investigator
Middle East Cancer Consortium
June 1999 – May 2001
Funding: 25,385 Euro
- F.64** *Additional Funding for the project Gynecological Cancer Diagnostic Telepathology and Teleconsultation Network*
Co-Principal Investigator
Rotary International
May 2000
Funding: 21,000 Euro
- F.65** *Training Virtual Environment for Life-long Learning in Biomedicine (TRAVELLING)*
Co- Investigator
European Commission, DG XXII
Leonardo Da Vinci Programme
December 1998 – December 2000
Funding: 5,950 Euro (Total budget 195,495 Euro)
- F.66** *Cultural Journeys in the Information Society (CJIS)*
Co-Investigator
European Commission
International Scientific Co-operation Initiative
December 1998 – November 2000
Funding: 39,378 Euro (Total budget 511,667 Euro)
- F.67** *An Integrated Portable Medical Device for Emergency Telemedicine – HC4027, EMERGENCY-112*
Co-Investigator
European Commission, DG XIII
4th Research & Development Framework Programme, Healthcare Telematics
January 1998-December 2000
Supported by the Government of Cyprus Planning Bureau
Funding: 63,018 Euro (Total budget 1,092,212 Euro)
- F.68** *Mobile Unit for Health Care Provision via Telematic Support-HC1001*
Co-Investigator
European Commission, DG XIII
4th Research & Development Framework Programme, Healthcare Telematics
January 1996-December 1998
Supported by the Government of Cyprus, Planning Bureau
Funding: 72,202 Euro (Total budget 1,925,585 Euro)
- F.69** *Health Telematics Training Network - HEALTHNET*
Principal Investigator
European Commission, DG XXII
Leonardo Da Vinci Programme
December 1997 – December 2000
Funding: 142,280 Euro
- F.70** *The Value of Non-Invasive Investigations in Identification of Individuals with Asymptomatic Carotid Stenosis at Risk of Stroke (ACSRS)*
Co-Investigator

European Commission, DG XII
 Biomedical and Health Research 1994-1998
 January 1997-December 1999
 Supported by the Government of Cyprus, Planning Bureau
 Funding: 81,835 Euro (Total budget 350,100 Euro)

F.71 *Electronic Roads in the Information Society (ERIS)*

Co-Investigator
 University of Cyprus
 January 1997-December 2000
 Funding: 43,775 Euro (Total budget 218,867 Euro)

F.72 *Neurophysiology Equipment*

Co-Investigator
 REUTERS
 July 1997
 Funding: 5,255 Euro (Total budget 25,750 Euro)

F.73 *The Development of Novel Techniques and Neural Network Models for Medical Imaging: Application in Breast Cancer Diagnosis*

Co-Principal Investigator
 Planning Bureau, Cyprus/General Secretariat of Research and
 Technology, Greece
 January 96 - January 98
 Funding: 25,400 Euro

F.74 *An Integrated System for Decision Support in Medicine*

Principal Investigator
 University of Cyprus
 January 96 - December 96
 Funding: 3,328 Euro

III.6 Completed Research Projects for the Period 1986-1995

F.75 *Neurophysiology Equipment: Nicolet Viking IV Electromyograph*

Principal Investigator
 Nicolet Biomedical Inc., USA
 July 1995
 Funding: 26,278 Euro

F.76 *Laser-Doppler Flowmetry for Microcirculation Monitoring: Advanced Signal Processing Aspects*

Principal Investigator
 University of Cyprus
 January 94 - December 95
 Funding: 2,627 Euro

F.77 *Image Processing in Histopathology*

Principal Investigator
 Commission of the European Communities,
 International Scientific Cooperation Initiative
 Marie Curie Fellowship
 January 94 - December 94
 Funding: 32,585 Euro

- F.78** *Quantitative Immunohistochemical Assessment of Prognostic Factors in Carcinoma of the Breast*
Co-Investigator
University of Cyprus
September 93 - August 96
Funding: 43,795 Euro
- F.79** *Computer Aided Diagnosis of Neuromuscular Disorders Based on EMG and Muscle Biopsy Findings*
Co-Investigator
University of Cyprus
September 93 - December 1994
Funding: 3,505 Euro
- F.80** *Laser-Doppler Flowmetry for Microcirculation Monitoring*
Co-Investigator
Commission of the European Communities, Directorate-General XII,
Biomedical and Health Research 1991-1994
January 1993 - December 1995
- F.81** *Computer Hardware*
Co-Principal Investigator
NCR International
January 1990 - December 1991
Funding: 28,482 Euro
- F.82** *Computer Hardware, Software, Peripherals, Data Acquisition Cards*
Co-Principal Investigator
From the Grant by the US Government in the context of its humanitarian aid programme to Cyprus through the UNHCR for the creation of the Cyprus Institute of Neurology and Genetics (CING)
June 1990
Funding: 17,516 Euro (CING was granted \$600,000 in 1990 for equipment, and \$1.8 million in 1991 for building its own premises. In addition, \$2.0 million have been allocated for 1992).
- F.83** *Computer Aided Diagnostic Systems in Medicine*
Co-Principal Investigator
Leventis Foundation
January 1989 - December 1990
Funding: 46,092 Euro
- F.84** *Computer Aided Analysis of Motor Unit Potentials on the Cadwell Excel Electromyograph*
Principal Investigator
Cadwell Labs, USA
September 1989 - August 1991
Funding: 78,835 Euro
- F.85** *Neurophysiology Equipment: Excel Electromyograph, and MES-10 Magnetic Stimulator*
Principal Investigator
Cadwell Labs, USA
September 1989 - August 1991
Funding: 87,592 Euro
- F.86** *Computer Hardware*
Principal Investigator

NCR International
June 1986 - June 1989
Funding: 8,058 Euro

F.87 *Numerical Pattern Recognition in the Automatic Analysis of Motor Unit Potentials*

Co-Investigator
Muscular Dystrophy Group of Great Britain
April 1986 - March 1988
Funding: 21,020 Euro

IV. DISSERTATION/THESES SUPERVISION

Summary Numbers

IV.1 PhD Dissertations

A. Completed	16
B. In Progress.....	8
C. Member of Assessment Committee.....	33

IV.2 MSc Theses

A. Completed	53
B. In Progress.....	2

IV.1 PhD Dissertations

A. Completed⁴

1. ***Machine Learning for Privacy Preserving Data Publishing and the Analysis of Categorical Data in the Medical Domain***
Aristos Aristodemou, Ph.D. 2020
Department of Computer Science, University of Cyprus
Supervised since September 2011
2. ***Multiscale AM-FM Models Based On Multiple Gabor Filter Families and Application in Medical Imaging***
Ioannis Constantinou, Ph.D. 2017
Department of Computer Science, University of Cyprus
Supervised since January 2009
3. ***Real-Time Adaptation to Time-Varying Constraints for Reliable Mhealth Video Communications***
Zinonas Antoniou, Ph.D. 2017
Department of Computer Science, University of Cyprus
Supervised since September 2010
4. ***Scientific Workflow Systems and Multi-Objective Evolutionary Algorithms for Life Sciences Informatics***
Christos Kannas, Ph.D. 2017
Department of Computer Science, University of Cyprus
Supervised since September 2011
5. ***Mobile video tele-echography robotic platform over 4G-LTE***
Sotiris Avgousti, Ph.D. 2016
University of Orleans, France & Technical University of Cyprus, Cyprus
Supervised jointly with Prof. P. Vиейres, Laboratory of Vision and Robotics (LVR), Assist. Prof. S. Voskarides, since January 2014
6. ***Computational Intelligence Algorithms to Identify Multivariate Genotype to Phenotype Interactions in High Dimensional SNP and Phenotype Datasets***
Athos Antoniadis, Ph.D. 2011

⁴ PhD students that completed their studies with joint supervision were supervised with fellow colleagues in other Universities. These students carried out their work at the University of Cyprus. This is also documented by the co-authored publications.

- Department of Computer Science, University of Cyprus
Supervised since September 2002
7. ***Diagnostically Resilient Encoding, Wireless Transmission, and Quality Assessment of Medical Video***
Andreas Panayides, Ph.D. 2011
Department of Computer Science, University of Cyprus
Supervised since September 2005
 8. ***Data Mining in Medical Datasets***
Minas Karaolis, Ph.D. 2010
Department of Computer Science, University of Cyprus
Supervised since September 2001
Co-authored publications: J.43, C.79, C.98.
 9. ***Hybrid Multiobjective Evolutionary Algorithms in Small Molecule De Novo Design***
Christodoulos Nickolaou, Ph.D. 2010
Department of Computer Science, University of Cyprus
Supervised since September 2004
Co-authored publications: C.111.
 10. ***An Integrated Endoscopy Image Analysis System in the Assessment of Gynaecological Cancer***
Marios Neophytou, Ph.D. 2007
Department of Electrical and Computer Engineering, National Technical University of Athens, Greece
Supervised jointly with Prof. D. Koutsouris
Co-authored publications: J.23, JS.3, C.81, C.84, C.88, C.95, C.99, C.106.
 11. ***Wireless Health Information Systems***
Sotos Voskarides, Ph.D. 2007
Department of Electronic Engineering Brunel University, UK
Supervised since June 2001, jointly with Prof. M. Hadjinicolaou
Co-authored publications: J.41, BC.11, C.71, C.72, C.76, C.80, C.86.
 12. ***Ultrasound Image Analysis of the Carotid Artery***
Christos Loizou, Ph.D. 2005
School of Computing and Information Systems, Kingston University, UK
Supervised jointly with Prof. Robert Istepanian.
Co-authored publications: J.29, J.31, J.35, J.36, J.43, BC.15, BC.17, BC.18, C.73, C.74, C.77, C.85, C.87, C.91, C.94, C.102, C.108, C.109.
 13. ***Computer Aided Assessment of Certain Neuromuscular Disorders Based on Surface Electromyography***
Kaplanis Prodromos, Ph.D. 2004
Department of Medical Engineering and Physics, University of London, King's College School of Medicine and Dentistry, UK
Supervised jointly with Prof. Colin Roberts, Head of the Department.
Co-authored publications: JS.2, C.41, C.55, C.60, C.61, C.75, C.92, A.22, A.25, A.35.
 14. ***Neural Network Pattern Recognition in Biosignal Analysis***
Christodoulos Christodoulou, Ph.D., 2000
Department of Electronic Engineering, University of London, Queen Mary and Westfield College
Supervised jointly with Dr. William Fincham (Senior Lecturer), and Dr John Bigham (Lecturer).

Co-authored publications: J.11, J.12, J.24, J.25, J.29, J.34, J.43, BC.4, BC.8, BC.10, BC.15, BC.18, C.30, C.33, C.35, C.41, C.42, C.45, C.49, C.50, C.51, C.53, C.54, C.62, C.63, C.69, C.73, C.74, C.78, C.82, C.89, C.90, C.92, C.93, C.96, C.98, C.100, C.101, C.104, C.110.

15. ***Immovable Property Taxation and the Development of an Artificial Neural Network Evaluation System for Residential Properties in Cyprus***
Panayiotis Panayiotou, Ph.D., 1999
Department of Built Environment, University of Glamorgan
Supervised jointly with D. Jenkin (Lecturer) and F. Plimmer (Reader).
Co-authored publications: J.15, J.16, C.58.
16. ***Virtual Search for Simple Non-Rigid Multi-Feature Objects in Histopathologic Image Data***
Frank Theo Schnorrenberg, Ph.D., 1998
Department of Computer Science, University of Groningen
Supervised jointly with Prof. N. Petkov and Prof. C.N. Schizas.
Co-authored publications: J.8, J.19, J.40, BC.7, BC.16, C.26, C.32, C.38, C.39.

B. In Progress

17. ***Extracting Explainable Assessments of Alzheimer's disease via Machine Learning on brain MRI imaging data***
Kleo Achilleos, M.Sc.
Department of Computer Science, University of Cyprus
Supervised since January 2013
Supervised jointly with Prof. A. Kakas
18. ***Multi-scale AM-FM models in image and video processing and analysis***
Kyriacos Constantinou, M.Sc.
Department of Computer Science, University of Cyprus
Supervised since January 2014
19. ***Quantitative Texture analysis on MRI imaging in the assessment of Alzheimer's disease***
Stephanos Leandrou, M.Sc.
City University, London, UK
Supervised jointly with Prof. P. Kyriacou, Department of Biomedical Engineering, since May 2015
20. ***Explainable Argumentation-based framework for Explainable Machine Learning in Medical Systems***
Nicoletta Prentza, M.Sc.
Department of Computer Science, University of Cyprus
Supervised since September 2017
Supervised jointly with Prof. A. Kakas
21. ***MRI Image Analysis in Multiple Sclerosis***
Antria Nicolaou, M.Sc.
Department of Computer Science, University of Cyprus
Supervised since September 2019
22. ***Virtual Reality Interventions in Pain Management***
Melpo Pittara, M.Sc.
University of Groningen, Netherlands
Supervised jointly with Prof. N. Petkov, Department of Mathematics and Computing Science, since September 2019

23. ***Brain Computer Interfacing in VR Gaming and Cognitive Tasks***
Marios Hadjaros, M.Sc.
Department of Computer Science, University of Cyprus
Supervised since September 2020
24. ***Motion Monitoring and Analytics in VR Rehabilitation Tasks***
Fotos Frangoudes, M.Sc.
Department of Computer Science, University of Cyprus
Supervised since September 2020

C. Member of PhD Assessment Committee

- | | |
|---|----|
| 1. University of Cyprus, Cyprus: | 22 |
| 2. University of Groningen, Holland: | 3 |
| 3. University of Gottenberg, Sweden: | 1 |
| 4. City University, UK: | 4 |
| 5. Kingston University, UK: | 1 |
| 6. University of Zaragoza, Spain: | 1 |
| 7. National Technical University of Athens, Greece: | 1 |

IV.2 MSc Theses

A. Completed

1. ***An FHIR Based EHR System***
Nicolas Kyriacou, M.Sc. 2020
2. ***Spatial Memory, Visual Search and Attention***
Marios Hadjaros, M. Sc. 2020
3. ***A Multi-User VR EHR Platform***
Elena Prodromou, M. Sc. 2020
4. ***De Novo Metagenomics Clustering Platform***
Christa Philippou, M. Sc. 2019
5. ***Surgical Tool Tracking in Endoscopic Video***
Pieris Hadjianastasi, M. Sc. 2018
6. ***Semi-Automated Measurement of Ultrasonic Diaphragmatic Motion***
Constantinos Chrysostomou, M. Sc. 2018
7. ***Evaluation of Open Source Video Video Coders***
Iacovos Rodotheou, M. Sc. 2017
8. ***ePrescription and eDispensing based on the IHE Protocols***
Georgia Rotsidou, M. Sc. 2017
9. ***Content Based Carotid Ultrasound Image Retrieval System***
Socratis Makarounas, M. Sc. 2017
10. ***A Robotised Teleechography Ultrasound Video System***
Argyris Iacovou, M. Sc. 2016
Department of Computer Science, University of Cyprus

11. ***Simulated Genetic Datasets***
Panayiota Mytilineou, M. Sc. Thesis 2014
Department of Computer Science, University of Cyprus
12. ***epSOS Patient Summary Implementation in OpenEMR***
Chrystalla Polyviou, M. Sc. Thesis 2014
Department of Computer Science, University of Cyprus
13. ***Genetic Aligning Algorithms for Genotype Identification***
Panayiota Mytilineou, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
14. ***MRI Image Processing and Archiving***
Elena Michael, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
15. ***Ultrasound Imaging Carotid Plaque Motion Estimation***
Ioanna Herakleous, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
16. ***Surgical Tool Tracking in Hysteroscopy Video***
Ioanna Charalambous, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
17. ***Rule Extraction Using Decision Trees in a Coronary Heart Events Disease Database***
Katerina Tourtouri, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
18. ***Real-Time Emotion Recognition System for Monitoring the Elderly – Part 1***
Chrystalla Miltiadou, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
19. ***Real-Time Emotion Recognition System for Monitoring the Elderly – Part 2***
Nikolas Papachrysanthou, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
20. ***Real-Time Emotion Recognition System for Monitoring the Elderly – Part 3***
Marios Georghiadis, M. Sc. Thesis 2013
Department of Computer Science, University of Cyprus
21. ***Telemonitoring System for Monitoring Post Cardiac Surgery Patients – ECG Analysis***
Maria Efthymiou, M. Sc. Thesis 2012
Department of Computer Science, University of Cyprus
22. ***Quantitative Monitoring of Iron Distribution in MRI in Thalassaemia***
Kyriacos Kyriacou, M. Sc. Thesis 2012
Department of Computer Science, University of Cyprus
23. ***Wireless Transmission of Ultrasound Video in Real Time in Modile Devices***
Eirini Eleftheriou, M. Sc. Thesis 2012
Department of Computer Science, University of Cyprus
24. ***Telemonitoring System for Monitoring Post Cardiac Surgery Patients – Mobile Unit***
Prokopis Prokopiou, M. Sc. Thesis 2012

- Department of Computer Science, University of Cyprus
25. ***A Telemonitoring System for Children with Cardiac Arrhythmias***
Chimonidou Panagiota, M. Sc. Thesis 2010
Department of Computer Science, University of Cyprus
 26. ***A Parallel Implementation of a Multi-objective Evolutionary Algorithm***
Christos Kannas, M. Sc. Thesis 2009
Department of Computer Science, University of Cyprus
 27. ***Rule Extraction in a Cardiovascular Disease Database Using Decision Trees***
Demetra Xadjipanayi, M. Sc. Thesis 2009
Department of Computer Science, University of Cyprus
 28. ***Rule Extraction in a Cardiovascular Disease Database Using Association Rule Algorithms***
Loukia Papaconstantinou, M. Sc. Thesis 2009
Department of Computer Science, University of Cyprus
 29. ***Wireless Transmission of Video in Real Time***
Aris Vlotomas, M. Sc. Thesis 2009
Department of Computer Science, University of Cyprus
 30. ***A Data Mining System Applied in the Assessment of Children with Congenital Heart Disease***
Maria Andreou, M. Sc. Thesis 2008
Department of Computer Science, University of Cyprus
 31. ***A P2P Workflow Management System in e-Emergency***
Vaso Pavlaki, M. Sc. Thesis 2008
Department of Computer Science, University of Cyprus
 32. ***Content Based Carotid Ultrasound Image Retrieval System***
Ioanna Ioakeim, M. Sc. Thesis 2008
Department of Computer Science, University of Cyprus
 33. ***Data Preprocessing Algorithms***
Demetris Papademetriou, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
 34. ***Rule Extraction Based on Genetic Algorithms***
Katerina Neophytou, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
 35. ***Rule Extraction from Decision Trees in Medical Databases***
Antonia Loizou, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
 36. ***A Data Mining System Applied in the National Database for Mammography – Part 1***
Chrysanthos Chrysanthou, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
 37. ***A Data Mining System Applied in the National Database for Mammography – Part 2***
George Ioakeim, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
 38. ***Application of Wearable Sensors for the Monitoring of Children with Cardiac Arrhythmias***

- Paraskeva Loukas, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
39. ***AM-FM Analysis of SEMG***
Emilios Hadjirkokopis, M. Sc. Thesis 2007
Department of Computer Science, University of Cyprus
40. ***A Neural Network Architecture Based on Dissimilar Neurons***
Anna Pitsillidou, M. Sc. Thesis 2006
Department of Computer Science, University of Cyprus
41. ***A Data Mining System in the Assessment of Vine Products***
Christiana Lazou, M. Sc. Thesis 2006
Department of Computer Science, University of Cyprus
42. ***Morphological Analysis of Ultrasound Images of the Carotid Artery***
Andreas Mavrommatis, M. Sc. Thesis 2006
Department of Computer Science, University of Cyprus
43. ***SVM Models in Medical Diagnostic Systems***
Stavros Panayiotou, M. Sc. Thesis 2006
Department of Computer Science, University of Cyprus
44. ***3D Texture Analysis***
Christos Andreou, M. Sc. Thesis 2006
Department of Computer Science, University of Cyprus
45. ***CMT Blast Analysis***
Alice Tutunzian, M. Sc. Thesis 2006
Department of Computer Science, University of Cyprus
46. ***Content Based Image Retrieval in Ultrasound Imaging of the Carotid Artery***
Spyros Spyrou, M. Sc. Thesis 2005
Department of Computer Science, University of Cyprus
47. ***An Online Analytical Mining System Based on Association Rules in the Assessment of Stroke***
Prokopios Savvides, M. Sc. Thesis 2005
Department of Computer Science, University of Cyprus
48. ***Association Rule Extraction in a Breast Cancer Database***
Zoi Xadgigeorgiou, M. Sc. Thesis 2005
Department of Computer Science, University of Cyprus
49. ***Rule Extraction from Neural Networks***
Maria Mikallou, M. Sc. Thesis 2005
Department of Computer Science, University of Cyprus
50. ***Feature Selection Algorithms***
Demetris Simeonides, M. Sc. Thesis 2004
Department of Computer Science, University of Cyprus
51. ***An Algorithm for the Identification of the Genes Responsible for the Distal Hereditary Motor Neuropathy***
Christothea Stylianidou, M. Sc. Thesis 2004
Department of Computer Science, University of Cyprus

52. ***Model Based Decomposition of MUAPs into their Constituent SFEAPs***
Maria Xyda, M. Phil. Thesis 2006
Department of Informatics, University of Glamorgan, UK
Supervised jointly with Dr. Paul Angel.
53. ***Autoregressive Spectral Modeling of Motor Unit Action Potentials***
Elia Andreas, M. Phil. Thesis 1994
Department of Electronic Engineering, University of London, Queen Mary and Westfield College
Supervised jointly with Dr. William Fincham.

B. In Progress

1. ***Personal Assistant in a Rare Disease***
Stavroulla Kousparou, B. Sc. 2019
Supervised since September 2019
2. ***VR Gaming in the Management of Emotional Anxiety***
Marios Christodoulou, B. A. 2019
Supervised since July 2020

IV.3 Undergraduate Diploma Projects

More than 164 diploma projects supervised since 1993.

V. TEACHING EXPERIENCE

V.1 Courses Taught

A. University of Cyprus

Artificial Intelligence - CS604 (jointly with Y. Dimopoulos)
Fall 2003, 2004

Visual Computing – CS607
Fall 2008, 2009, 2010, 2011, 2012 (jointly with Y. Chrysanthou), 2013

Digital Video Processing – CS658
Spring 2006

Design with Embedded Systems – CS659
Spring 2006

Data Mining– CS662
Spring 2002, 2003, 2004, 2005, 2007

Computer Vision- CS668
Spring 2012, 2013 (jointly with Y. Chrysanthou)

IoT: Programming and Applications- CS428
Fall 2019

Digital Image Processing– CS445
Spring 2002, Fall 2003, 2005, 2006, 2011, 2012, 2015, 2016, 2017

Microprocessor Systems– CS423
Fall 1997, Fall 1998

Computational Learning Systems – CS442
Spring 1995

Artificial Intelligence – CS341
Spring 2013

Computer Organization and Assembly Programming – CS221
Fall 1993, Spring 1995, 1996, 1997, 1998, 1999, Fall 1999, 2003, 2004

Digital Systems– CS121
Spring 1997, 1998, 1999, 2000, 2003, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2015, 2016, 2017,
2019, 2020
Fall 2013

Unix and C – CS230
Fall 1995

Introduction to Computer Science – CS100
Fall 1993, Spring 1994, Fall 1994, 1995, 1996

Courses Developed: CS607, CS604, CS658. CS662, CS668, CS121, CS221, CS423, CS442, CS445

B. University of New Mexico**Computer Logic Design – EECE238**

Fall 2000 (two sections), Spring 2001, Fall 2001 (two sections)

C. Intercollege**Computer Organization**

Fall 1986, Spring 1987, Fall 1988, Spring 1989

D. Higher Technical Institute**Introduction to Expert Systems**

Fall 1988, 1989, 1990, Spring 1991

Introduction to Compiler Design

Spring 1989

V.2 Short Courses Taught**Aristotle University of Thessaloniki, Medical School**

MSc course in Medical Informatics

DICOM Fundamentals (3hrs)

Fall 2017, 2018, 2019, 2020

University of Patras, Faculty of Medicine, Laboratory of Medical Physics

MSc course in Medical Informatics

Computational Intelligence in Medical Systems (10hrs) (jointly with C.N. Schizas)

April 8-April 9, 2011

National and Kapodistrian University of Athens, Faculty of Nursing, Laboratory of Health Informatics

MSc course in Health Informatics

Biosignal Analysis (30hrs) (jointly with C.N. Schizas)

August 31-September 5, 1998

Cyprus Association of Medical Physics and Biomedical Engineering

Digital Signal Processing Applications (20 hrs)

Funded by the Industrial Training Authority of Cyprus

December 18-20, 1995

Intercollege

Assembly Language Programming (40 hrs)

Funded by the Industrial Training Authority of Cyprus

May 15 - August 5, 1987

V.3 Student Evaluations (Selected)

SEMESTER	COURSE	INSTRUCTOR SCORE OUT OF 5
Spring 2006	CS 658 Digital Video Processing	4.30
Fall 2005	CS 445 Digital Image Processing	4.42
Fall 2005	CS 121 Digital Systems	2.91

Spring 2005	CS 662 Data Mining	4.76
Fall 2004	CS 604 Artificial Intelligence	4.31
Fall 2004	CS 221 Computer Organization and Assembly Programming	3.10
Spring 2004	CS 662 Data Mining	4.50
Fall 2003	CS 604 Artificial Intelligence	4.30
Fall 2003	CS 445 Digital Image Processing	4.70
Spring 2003	CS 662 Data Mining	4.75
Fall 2002	CS 445 Digital Image Processing	4.41
Spring 2002	CS 662 Data Mining	4.87
Spring 2002	CS 445 Digital Image Processing	4.96
Fall 2001	EECE238 Computer Logic Design ⁺	4.50
Spring 2001	EECE238 Computer Logic Design ⁺	4.46
Fall 2000	EECE238 Computer Logic Design ⁺	4.42
Spring 2000	CS 121 Digital Systems	3.52
Fall 1999	CS 221 Computer Organization and Assembly Programming	4.58
Fall 1998	CS 221 Computer Organization and Assembly Programming	4.33

⁺ Taught at the University of New Mexico

VI. ADMINISTRATIVE AND COMMITTEE WORK EXPERIENCE

VI.1 Department Committees

- Member of the Undergraduate Program Committee, Department of Computer Science, University of Cyprus, 2012 - .
- Elected Vice-Chairperson of the Department of Computer Science, University of Cyprus, Nov. 2006 – Apr. 2008.
- Coordinator of the Undergraduate Program Committee, Department of Computer Science, University of Cyprus, 2003 - 2008.
- Co-Coordinator of the Undergraduate Program Committee, Department of Computer Science, University of Cyprus, 1999, 2000, 2002.
- Coordinator of the Digital Logic and Microprocessor Systems Laboratory, Department of Computer Science, University of Cyprus, 1993 - 2000.
- Departmental Representative of the Socrates Programme, Department of Computer Science, University of Cyprus, 1998, 1999, 2000.
- Coordinator for the Organization of Seminars, Department of Computer Science, University of Cyprus, 1998, 1999.
- Coordinator for CS400-Diploma Project, Department of Computer Science, University of Cyprus, June 1997.

VI.2 School Committees

- **Elected Dean of the School of Pure and Applied Sciences, University of Cyprus, May 2008 – May 2011.**
- Re-elected Member of the Board of the School of Pure and Applied Sciences, 2005-2006.
- Elected Member of the Board of the School of Pure and Applied Sciences, 2003-2004, 2015-2016.
- Member of the Committee for the Establishment of Health Sciences Research Unit, Department of Computer Science, University of Cyprus, April 1996.

VI.3 University Committees

- **Director of the Biomedical Engineering Research Centre, Nov. 2020**
- Chairperson of the Senate Committee: Disciplinary Audit Committee (Academic), University of Cyprus, May 2008 – April 2011 & 2018 – 2020.
- Investigating Officer of the Senate Committee: Disciplinary Audit Committee (Academic), University of Cyprus, 2016-2017.

- Member of the Finance and Personnel Committee, University of Cyprus, May 2008 – May 2011.
- Chairperson of the Ad-hoc Senate Committee on Encouraging Students to be More Active in Social Matters, University of Cyprus, 2006 - 2007.
- Chairperson of the Senate Committee on Information Systems, University of Cyprus, 2003 - 2004.
- Member of the Committee for the Evaluation of the tender eUniversity, University of Cyprus, April 2004 – July 2004.
- Member of the Committee for the Evaluation of the tender Security Policy for the University of Cyprus, University of Cyprus, October 2003 – December 2003.
- Member of the Committee for the Evaluation of Computer Equipment, University of Cyprus, April 1998, September 1999.

VI.4 Other Committees

- Coordinator of the Curriculum Committee, Department of Computer Engineering, Intercollege, October 1988 - June 1990.
- Member of the Scientific Staff Training Committee of the Cyprus Institute of Neurology and Genetics, 1988-1992.
- Member of the Commission of the European Communities Biomedical Health Projects Exploratory Committee of the Cyprus Institute of Neurology and Genetics, 1988-1992.
- Project Leader of the Medical Records Computerization Committee of the Cyprus Institute of Neurology and Genetics, 1988-1992.
- **Member of the Board of Directos** of the Cyprus Institute of Neurology and Genetics, 2017-2020.

VII. PROFESSIONAL ACTIVITIES

VII.1 Conference Activities

A. Conference General Chair/Co-Chair

- A.1. **BHI 2021: IEEE Biomedical and Health Informatics 2021, Athens, Greece, May, 2021.**
- A.2. **CAIP 2021: Computer Analysis of Images and Patterns, Cyprus, Sept. 29 - Oct. 1, 2021.**
- A.3. MECBME 2018: IEEE 4th Middle East Conference on Biomedical Engineering, Gammarth – Tunis, Tunisia, 28-30 March 2018.
- A.4. MEDICON 2016: XIV Mediterranean Conference on Medical and Biological Engineering and Computing, Cyprus, March 31st-April 2nd, 2016.
- A.5. MELECON'2016: IEEE Region 18th Mediterranean Electrotechnical Conference, Limassol, April 18-20, 2016.
- A.6. BIBE 2012: 12th IEEE International Conference on Bioinformatics and Bioengineering, Larnaca, November 12-14, 2012.
- A.7. ITAB 2009: IEEE Information Technology Applications in Biomedicine, Larnaca, November 5-7, 2009.
- A.8. e-Health Forum: 4th Meeting of the Greek Forum on Health Telematics, Limassol, April 26, 2002.
- A.9. MELECON'2000: IEEE Region 8 Mediterranean Conference on Information Technology and Electrotechnology, Limassol, May 29-31, 2000 (in collaboration with IEEE and IEE).
- A.10. MEDICON'98: MEDIterranean CONference on Medical and Biological Engineering and Computing, Limassol, June 14-17, 1998 (in collaboration with the IFMBE (International Federation of Medical and Biological Engineering) and IEEE EMBS).
- A.11. DSP95: International Conference on Digital Signal Processing, Limassol, June 26-28, 1995 (in collaboration with IEE, EURASIP and IEEP ASSP).
- A.12. DSP&CAES93: International Conference on Digital Signal Processing and Second International Conference on Computer Applications to Engineering Systems, Nicosia, July 14-16, 1993 (in collaboration with IEE, EURASIP and IEEP ASSP).
- A.13. CAES91: First Cyprus International Conference on Computer Applications to Engineering Systems, Nicosia, July 1-2, 1991 (in collaboration with IEEE and IEE).

B. Conference Program Chair / Co-Chair

- B.1. IEEE Melecon 2020 – IEEE Region 8 Mediterranean Conference on Information Technology and Electrotechnology, Track Smart Health Care, 2020, Palermo, Italy, June 16-18, 2020.
- B.2. **BHI 2019: IEEE Biomedical and Health Informatics 2019, Chicago, Illinois, 19-22 May, 2019.**

B.3. BHI 2018: IEEE Biomedical and Health Informatics 2018, Las Vegas, Nevada, 4-7 March, 2018.

- B.4. BHI 2017 Rapid Fire Co-Chair: IEEE Biomedical and Health Informatics 2017, Orlando, Florida, 15-18 February, 2017.
- B.5. **CBMS 2017: IEEE Computer-Based Medical Systems, Thessaloniki, Greece, June 22-24, 2017.**
- B.6. ISCCSP 2010: 4th International Symposium on Communications, Control and Signal Processing, Limassol, March 3-5, 2010.
- B.7. ITAB 2006: IEEE Information Technology Applications in Biomedicine, Ioannina, October 26-28, 2006.

C. Conference Session Chair (Selected)

- C.1. Co-Chairperson: Mobile and Remote Healthcare System, Interational Biomedical Engineering Conference (jointly with uHealthcare 2014), Guangju, Korea, Nov. 20-22, 2014.
- C.2. Co-Chairperson: Data Mining and Machine Learning, IEEE International Conference on Biomedical & Health Informatics (BHI), Valencia, Spain, June 1-4, 2014.
- C.3. Co-Chairperson: Telehealth/Telemedicine, EMBS 2012, 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, San Diego, California, USA, Aug. 28 – Sept. 1, 2012.
- C.4. Co-Chairperson: Towards Real Time Imaging, Image processing and Transmission, IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI 2012), Hong Kong and Shenzhen, China, January 2-7, 2012.
- C.5. Co-Organiser and Co-Chairperson: Cardiovascular Informatics (2 sessions), EMBS 2011, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Boston, Massachusetts, USA, Aug. 30 – Sept. 3, 2011.
- C.6. Co-Organiser and Co-Chairperson: eHealth and Telehealth, EMBS 2011, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Boston, Massachusetts, USA, Aug. 30 – Sept. 3, 2011.
- C.7. Co-Organiser and Co-Chairperson: eHealth and Telehealth, EMBS 2010, 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, Aug. 31 – Sept. 4, 2010.
- C.8. Organiser and Chairperson: mHealth, EMBS 2009, 31st Annual International conference of the IEEE Engineering in Medicine and Biology Society, 2-6, September, Minneapolis, Minnesota, 2009.
- C.9. Chairperson: CWSPI 2009, 2nd Cyprus Workshop on Signal Processing and Informatics, Nicosia, Cyprus, July 14, 2009.
- C.10. Track Chair of Medical Imaging, and Session Chair, BIBE 2008, 8th IEEE International Conference on BioInformatics and BioEngineering, October 8-10, Athens, Greece, 2008.
- C.11. Chairperson: CWSPI 2008, 1st Cyprus Workshop on Signal Processing and Informatics, Nicosia, Cyprus, July 14, 2008.

- C.12. Chairperson: ITAB 2007, Information Technology Applications in Biomedicine, November 8-11, Tokyo, Japan, 2007.
- C.13-14 Chairperson: Sessions Telemedicine I and II, [29th IEEE EMBS Annual International Conference](#) (EMBC07), August 23-26, Lyon, France, 2007.
- C.15. Chairperson: Summer School on Intelligent Systems, Organised in collaboration with European Thematic Network DOCTORAL EDUCATION IN COMPUTING (DEC), and the INTERREG III B Archimed Project: A Mediterranean Research and Higher Education Intranet in Medical and Biological Sciences, July, 2-6, Nicosia, Cyprus, 2007, www.cs.ucy.ac.cy/sums.
- C.16. Chairperson: Medical Imaging Technology, Organised in collaboration with the INTERREG III B Archimed Project: A Mediterranean Research and Higher Education Intranet in Medical and Biological Sciences, November 9, Nicosia, Cyprus, 2007.
- C.17. Chairperson: Session Neural Control, Reinforcement Learning and Applications, International Conference on Artificial Neural Networks (ICANN), 10-14 September 2006, Athens, Greece.
- C.18. Chairperson: Session Biosignal Analysis, Medicon and Health Telematics 2004, X Mediterranean Conference on Medical and Biological Engineering, July 31 – August 5, Naples, Italy, 2004.
- C.19. Chairperson: Session PACS, II EFOMP Mediterranean Conference on Medical Physics, The Analogue to Digital Migration of the Hospital Working Environment, 28-30 April, 2004, Limassol, Cyprus.
- C.20. Chairperson: Session Artificial Intelligence in Medicine, The 1st MEDINF International Conference On Medical Informatics & Engineering MEDINF'2003, Craiova, Romania, 9-11 October 2003.
- C.21. Chairperson: Session Classification, CAIP'2003 Computer Analysis of Images and Patterns, Groningen, The Netherlands, August 25-27, 2003.
- C.22. Chairperson: 14th International Conference on Digital Signal Processing, July 1-3, 2002, Santorini, Greece, Session on Biomedical Signal and Image Processing I.
- C.23. Chairperson: Research-Statistics-Cancer Care, 6th Marianna Lordos Seminar, The Cyprus Anti – Cancer Society, Larnaca, February 8-10, 2002.
- C.24. Co-Organizer and Chairperson: Mobile Health Systems, 23rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Constantinoupolis, Turkey, October 25-28, 2001.
- C.25. Co-Organizer and Chairperson: Track 04: Medical Informatics and Biomedical Information Technology: Image Analysis in Vascular Ultrasound, World Congress on Medical Physics and Biomedical Engineering, Chicago, USA, July 23-28, 2000.
- C.26. Co-Organizer and Chairperson: Workshop Session 2C: Tele-Medicine, Re-Engineering Cyprus for the Digital Age: New Business and New Jobs, Nicosia, December 18-19, 1999.
- C.27. Biomedical Applications, ICASSP 99, Phoenix, USA, March 16-19, 1999.
- C.28. Organiser and Chairman: Health Telematics, EURO-MED NET 98 Conference, Nicosia, March 4-7, 1998.

- C.29. Track: Neural Networks for Signal Processing, 16th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Baltimore, Maryland, November 3-6, 1994.
- C.30. Mini-Symposium Co-organizer: Neural Networks in Medical Diagnosis, 16th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Baltimore, Maryland, November 3-6, 1994.
- C.31. Track: Neural Networks, 15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, San Diego, California, October 28-31, 1993.
- C.32. Track: Muscle and Nerve Muscular Systems, Session: Neuromuscular System Neural Activity, 14th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Paris, France, Oct. 29 - Nov. 1, 1992.
- C.33. Expert Systems, IX International Congress of Electromyography and Clinical Neurophysiology, Jerusalem, Israel, June 8-12, 1992.
- C.34. Organiser and Chairman: Imaging Techniques in Histopathology and Cytology, Third National Seminar of the Association of Medical Physics and Biomedical Engineering, Nicosia, Cyprus, May 23rd, 1992.

D. Organizing Committee (Selected)

- D.1. Mobihealth: 5th International Conference on Wireless Mobile Communications and Healthcare, London, UK, 14 - 16 October, 2015.
- D.2. International Biomedical Engineering Conference (jointly with uHealthcare 2014), Guangju, Korea, Nov. 20-22, 2014.
- D.3. BHI 2012: IEEE-EMBS International Conference on Biomedical and Health Informatics, Hong Kong and Shenzhen, China, January 2-7, 2012.
- D.4. EMBS 2011: 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Boston, Massachusetts, USA, Aug. 30 – Sept. 3, 2011.
- D.5. EMBS 2010, 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, Aug. 31 – Sept. 4, 2010.
- D.6. PETRA 2009: 2nd International Conference on Pervasive Technologies Related to Assistive Environments conference, Corfu, Greece, June 9-12, 2009.
- D.7. ICANN 2009: 19th International Conference on Artificial Neural Networks^[1]_{SEP}, 14-17 September, Limassol, Cyprus.
- D.8. ITAB 2008: 7th International IEEE EMBS Special Topic Conference on Information Technology Applications in Biomedicine ITAB, May 30-31, Shenzhen, China, 2008.
- D.9. BIBE 2008: 8th IEEE International Conference on Bioinformatics and BioEngineering, October 8-10, Athens, Greece, 2008.
- D.10. ITAB2007: Information Technology Applications in Biomedicine, November 8-11, Tokyo, Japan, 2007.

- D.11. CAIP2007: 12th International Conference on Computer Analysis of Images and Patterns, August 27th - August 29th, 2007, Vienna, Austria.
- D.12. CBMS2007: 20th IEEE International Symposium on Computer Based Medical Systems, Special Track on Technology Enhanced Learning in Medical Education, June 20-22, 2007, Slovenia.
- D.13. MEDICON'07: MEDiterranean CONFerence on Medical and Biological Engineering and Computing, 26-30 June 2007, Ljubljana, Slovenia.
- D.14. 16th International Conference on Artificial Neural Networks (ICANN), 10-14 September 2006, Athens, Greece.
- D.15. International Conference On Intelligent Systems and Computing: Theory and Applications (ISYC 2006), Ayia Napa, Cyprus, July 2006.
- D.16. 3rd IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI), 7-9 June, Athens, Greece, June 2006.
- D.17. Medicon and Health Telematics 2004, X Meditteranean Conference on Medical and Biological Engineering, July 31 – August 5, Naples, Italy, 2004.
- D.18. 12th IEEE Mediteranean Electrotechnical Conference MELECON 2004, to be held on May 9-12, 2004 in Dubrovnik, Croatia.
- D.19. II EFOMP Mediterranean Conference on Medical Physics, The Analogue to Digital Migration of the Hospital Working Environment, 28-30 April, 2004, Limassol, Cyprus.
- D.20. D.20 Ninth European Conference on Artificial Intelligence in Medicine, 18-22 October 2003, Protaras, Cyprus.
- D.21. The 1st MEDINF International Conference On Medical Informatics & Engineering MEDINF'2003, Craiova, Romania, 9-11 October 2003.
- D.22. CAIP'2003 (Computer Analysis of Images and Patterns) August 25-27, 2003, Groningen, The Netherlands.
- D.23. 4th International IEEE EMBS Special Topic Conference on Information Technology Applications in Biomedicine, 24-26 April, Birmingham, UK, 2003.
- D.24. Medical Informatics Europe – Special Topic Conference 2002: The e-volution of IT in the Health Care Systems, Nicosia, Cyprus, 8-10 March, 2002.
- D.25. HEALTH-NET-CEEC 2001: Informatics Tools to Restructure Health Care Services - First Meeting of the Central and Eastern European Countries, Targu Mures, Romania, April 26-27-28, 2001.
- D.26. MEDICON'01: MEDiterranean CONFerence on Medical and Biological Engineering and Computing, Pula, Croatia, June 12-15, 2001.
- D.27. Tele EEG, Cyprus Institute of Neurology and Genetics, Nicosia, October 2-3, 1998.
- D.28. Medical Informatics in Cyprus (Nicosia-Cultural Month 95), Nicosia, October 11, 1995.

- D.29. International Conference on Medical Physics & Biomedical Engineering, Nicosia, May 5-7, 1994.
- D.30. Creativity and Science in the Great Europe of Cultural Centres, Nicosia, July 16-17, 1993.
- D.31. Trends in Health Care Technology, 4th Annual National Seminar of the Cyprus Association of Medical Physics and Biomedical Engineering, Limassol, May 29th, 1993.

VII.2 Reviewer For

A. Journals

- **Frontiers Digital Health, Founding Specialty Section Editor on Connected Health (2020-).**
- **IEEE Journal of Biomedical and Health Informatics, Associate Editor (2013-).**
- **IEEE Transactions on Information Technology in Biomedicine, Associate Editor (2000-2012).**
- **IEEE Transactions on Neural Networks, Associate Editor (2005-2007).**
- IEEE Transactions on Signal Processing.
- IEEE Transactions on Biomedical Engineering.
- IEEE Engineering in Medicine & Biology Magazine.
- IEEE Transactions on Multimedia.
- IEEE Transactions on Image Processing.
- IEEE Reviews in Biomedical Engineering.
- Annals of Operations Research.
- Artificial Intelligence in Medicine.
- BioMedical Engineering OnLine.
- Computer Based Medical Methods.
- Computerized Medical Imaging and Graphics.
- Frontiers in Physiology.
- IET Healthcare Technology Letters.
- Internation Journal of Medical Robotics and Computer Assisted Surgery.
- **Journal of Biomedical Signal Processing and Control, Member of Editorial Board (2008-).**
- Journal of Electromyography and Kinesiology.
- Journal of Intelligent Systems.

- Journal of Medical Internet Research
- Journal of Systems Architecture The EURO MICRO Journal.
- Knowledge and Information Systems (KAIS).
- Medical and Biological Engineering and Computing.
- Medical Engineering & Physics.
- Technology and Health Care.
- HTI Review, 1989, 1990.

B. Conferences (Selected)

- Interational Biomedical Engineering Conference (jointly with uHealthcare 2014), Guangju, Korea, Nov. 20-22, 2014.
- 2013 Constantinides International Workshop on Singal Processing, CIWSP 2013, London, UK, Jan. 25, 2013.
- IEEE 12th International Conference on Bioinformatics and Bioengineering (BIBE), Larnaka, November 12-14, Cyprus, 2012.
- EMBS 2011, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Boston, Massachusetts, USA, Aug. 30 – Sept. 3, 2011.
- EMBS 2010, 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, Aug. 31 – Sept. 4, 2010.
- PETRA 2009: 2nd International Conference on PErvasive Technologies Related to Assistive Environments conference, Corfu, Greece, June 9-12, 2009.
- EMBS 2009: 31st Annual International conference of the IEEE Engineering in Medicine and Biology Society, 2-6, September, Minneapolis, Minnesota, 2009.
- ICANN 2009: 19th International Conference on Artificial Neural Networks, ^[1]_{SEP}14-17 September, Limassol, Cyprus.
- DSP 2009: 16th International Conference on Digital Signal Processing, Santorini, Greece, July 5-7, 2009
- AIAI 2009: 5th IFIP International Conference on Artificial Intelligence Applications & Innovations, 23-25 April, Thessaloniki, 2009.
- BIBE 2008: 8th IEEE International Conference on BioInformatics and BioEngineering, October 8-10, Athens, Greece, 2008.
- 30th Annual International conference of the IEEE engineering in Medicine and Biology Society, 20-24, August, Vancouver, Canada, 2008.

- CBMS 2008: 21th IEEE International Symposium on Computer-Based Medical Systems, June 17-19, University of Jyväskylä, Finland, 2008.
- ITAB 2008: 7th International IEEE EMBS Special Topic Conference on Information Technology Applications in Biomedicine ITAB, May 30-31, Shenzhen, China, 2008.
- ITAB2007: Information Technology Applications in Biomedicine, November 8-11, Tokyo, Japan, 2007.
- CAIP2007: 12th International Conference on Computer Analysis of Images and Patterns, August 27th - August 29th, 2007, Vienna, Austria.
- CBMS2007: 20th IEEE International Symposium on Computer Based Medical Systems, Special Track on Technology Enhanced Learning in Medical Education, June 20-22, 2007, Slovenia.
- MEDICON'07: MEDiterranean CONference on Medical and Biological Engineering and Computing, 26-30 June 2007, Ljubljana, Slovenia.
- 16th International Conference on Artificial Neural Networks (ICANN), 10-14 September 2006, Athens, Greece.
- 3rd IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI), 7-9 June, Athens, Greece.
- Proceedings of the 3rd European Medical & Biological Engineering Conference of IFMBE (EMBECON 05), Prague, Czech Republic, 20-25 November 2005.
- Medicon and Health Telematics 2004, X Mediterranean Conference on Medical and Biological Engineering, July 31 – August 5, Naples, Italy, 2004.
- International Conference on Computer Systems and Technologies – CompSysTech'04, 17-18 June, Rousse, Bulgaria, 2004.
- 12th IEEE Mediterranean Electrotechnical Conference MELECON 2004, to be held on May 9-12, 2004 in Dubrovnik, Croatia.
- II EFOMP Mediterranean Conference on Medical Physics, The Analogue to Digital Migration of the Hospital Working Environment, 28-30 April, 2004, Limassol, Cyprus.
- Ninth European Conference on Artificial Intelligence in Medicine, 18-22 October 2003, Protaras, Cyprus.
- 1st MEDINF International Conference on Medical Informatics & Engineering, 12-15 October, Craiova, Romania, 2003.
- CAIP'2003 (Computer Analysis of Images and Patterns) April 2003, Groningen, The Netherlands.
- Medical Informatics Europe, Pola, France, 2003.
- 4th International IEEE EMBS Special Topic Conference on Information Technology Applications in Biomedicine, 24-26 April, Birmingham, UK, 2003.
- IEEE International Conference on Image Processing, ICIP 2001, October 7-10, Thessaloniki, Greece.

- MEDITerranean CONFerence on Medical and Biological Engineering and Computing, Pula, Croatia, June 12-15, 2001.
- World Congress on Medical Physics and Biomedical Engineering, Chicago, USA, July 23-28, 2000.
- European Signal Processing Conference, Rhodes, Hellas, September 14-17, 1998.
- IEEE Region 8 Students Paper Contest 1995.
- 15th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, San Diego, California, October 28-31, 1993.
- IX International Congress of Electromyography and Clinical Neurophysiology, Jerusalem, Israel, June 8-12, 1992.
- V Congress of the International Society of Greek Neuroscientists, Limassol, Sept. 1988.
- IIIrd International Conference on Quantitative EMG, Nicosia, June 1988.

VII.3 Professional Societies Activities

- A. Fellow of the International Academy of Medical and Biological Engineering (IAMBE), (elected in June 4, 2018) in recognition of outstanding contributions to the field of Medical and Biological Engineering.**
- B. Fellow of the IEEE (elected in 4th Jun. 2018) for contributions to the development of medical diagnostic and mobile health systems.**
 - Member of the Computer, Acoustics Speech and Signal Processing (ASSP), Engineering in Medicine and Biology, and Neural Networks Societies.
 - **IEEE EMBS Distinguished Lecturer (2013-2014).**
 - **IEEE EMBS Technical Committee on Information Technology for Health (2011-).**
- C. Fellow of the European Alliance for Medical and Biological Engineering & Science (EAMBES) (elected in 12th Mar. 2018) in recognition of distinguished leadership and important contributions to research and advocacy of Medical and Biological Engineering & Science.**
 - Elected Member of the Council, Councilor on Education, Mar. 2017 – Mar. 2019.
 - Member of the Council, Councilor on Conferences and Publications, Mar. 2019 – Mar. 2021.
 - Member of the Fellows Committee, Mar. 2019 – Mar. 2021.
- D. Fellow of Institute of Engineering Technology (FIET), (elected in 22nd Feb. 2011) Original research resulting in international recognition.**
- E. IEEE Cyprus Section**
 - President 1998-2000
 - Vice-President 1996-1997
 - Secretary 1994-1995, 2002-2004
 - Founding member of the Section

F. Cyprus Association of Medical Physics and Biomedical Engineering

- President 1996-1998
- Vice-President 1994-1996
- Secretary 1992-1994, 2002-2004, 2006-2008, 2008-2010
- Member of the council 2004-2006, 2006-2008, 2008-2010
- Founding member of the Association

G. Cyprus Society of Medical Informatics

- President 2012-2015, 2015-2016
- Secretary 2004-2006, 2006-2008, 2008-2012
- Council member 2002-2004

H. ProRec-CY (mission: to promote the widespread use of high quality electronic health record (EHR) systems in Cyprus)

- Secretary 2006-
- Founding member

I. Member

- European Society for Engineering and Medicine
- Greek Artificial Intelligence Society – Honorary Member
- Cyprus Computer Society
- Technical Chamber of Cyprus

VII.4 Project Evaluation, Reviewing, and Consulting**A. Experience in Project Evaluation**

1. **General Secretariat of Research and Technology, Greece**
Annual Program for the Financing of Research Projects
Project Evaluator
June 1999
2. **General Secretariat of Research and Technology, Greece**
ATHLETICS CALL, Research and Development Projects
Project Evaluator
January 2003
3. **Ministry of Commerce and Industry, Cyprus**
Call for High Technology and Innovative Incubator Companies
Project Evaluator
January 2003, June 2003, October 2004, June 2006, December 2006
4. **Ireland Health Research Board**
Project Evaluator – Health Telematics
March 2005
5. **EU FP6 Information Society Technologies**
Call for ICT for Health Nov. 2004
Project Evaluator – Directorate H - ICT For Citizens and Businesses Unit H1 - ICT for Health

April 2005

6. **Slovenian Research Academy**
Project Evaluator – General Applied Research Project
October 2007
7. **Ministry of Education, Lifelong Learning and Religious Affairs, Greece**
Project Evaluator – Archimedes Research Projects Call
January (1st call) and October (2nd call) 2011
8. **Ministry of Education, Lifelong Learning and Religious Affairs, Greece**
Project Evaluator – Thalys Research Projects Call
February 2011, October 2011
9. **National Science Foundation, USA**
Project Evaluator – eHealth and Well Being Call
March 2011
10. **Czech Science Foundation, Czech Republic**
Project Evaluator
February 2011
11. **Ambient Assisted Living (AAL), Programme 2014, EU**
Project Evaluator & Rapporteur
August 2014
12. **Slovenian Research Agency, Slovenia**
Project Evaluator
September 2014
13. **Canadian Institute of Health Research, Canada**
Project Evaluator
December 2015
14. **Impulse Council, KU Leuven, Netherlands**
Project Evaluator
December 2015
15. **Ambient Assisted Living (AAL), Programme 2016, EU**
Project Evaluator
June 2016
16. **European Commission Horizon 2020 Work Programme 2018-2020**
Call for ICT-49-2020 – Innovation Actions (IA), DT-ICT-12 – Innovation Actions (IA)
Project Evaluator – DG CNECT – Communications Networks, Content and Technology, Unit A1 –
Robotics & Artificial Intelligence
July – August 2020

B. Consulting

1. Ministry of Health, Cyprus
Expression of Interest (EOI) For The Supply, Installation And Commissioning Of A Turnkey Solution For An Integrated Health Care Information System For The Ministry Of Health Of The Government of the Republic Of Cyprus

Consultant

November 2003 - December 2004

2. Ministry of Education, Cyprus
Member of Several Technical Committees for the Evaluation of Computer Science Courses at Institutes of Higher Education in Cyprus
3. Hellenic Quality Assurance Agency of Higher Education (HQAA)
Member of the External Evaluation process of the Department of Informatics & Telecommunications of the National & Kapodistrian University of Athens
9/5/2011 to 14/5/2011.
Member of the External Evaluation process of the Department of Computer Science and Biomedical Informatics of the University of Central Greece
31/10/2011 to 5/11/2011.
4. Health Insurance Organisation, Cyprus
Tender OAY 02/2007 “Development, implementation, operation and support of a total solution for the information technology system and other business processes of the National Health Insurance System in Cyprus”
Consultant
January 2016 – June 2016
5. Hellenic Authority of Higher Education (HAHE)
Member of the External Evaluation & Accreditation Panel of the Undergraduate Study Programme of Computer Science and Biomedical Informatics of the University of Thessaly, July 6th, 2020 – July 11th, 2020

VIII. INVITED SEMINARS AND PRESENTATIONS

Summary Numbers

Invited Seminars and Presentations: 70

1. *Ultrasound Video Analysis of Carotid Plaque Morphology for the Assessment of Stroke*, Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, USA, May 24, 2019.
2. *Quantitative Imaging (Radiogenomics) for Precision Medicine*, Bernoulli Institute, Colloquia Computer Science, University of Groningen, Netherlands, June 22nd, 2018. (jointly with Dr A. Panayides).
3. *Quantitative Imaging for Precision Medicine*, EAMBES-Fellows Meeting in London, Biomedical Engineering Challenges in Europe, City University of London, UK, March 12th and 13th, 2018.
4. *Quantitative Imaging for Precision Medicine*, SENSIP Centre, School of Engineering, Arizona State University, Phoenix, AZ, USA, March 2nd, 2018. (jointly with Dr A. Panayides).
5. *Quantitative Imaging for Precision Medicine*, Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, USA, March 1st, 2018. (jointly with Dr A. Panayides).
6. *Cardiovascular Informatics: Predicting the risk of stroke based on ultrasound image analysis of the atherosclerotic carotid plaque*, 9th International Conference on Computational Collective Intelligence (ICCCI 2017), Nicosia, Cyprus, Sept. 27-29, 2017.
7. *eHealth: Big Data Analytics and Precision Medicine*, Policy Dialogue on Health System and Public Health Reform in Cyprus, Health in the 21st Century, Nicosia, Cyprus, 26-27 September 2017.
8. *Cardiovascular Informatics: Predicting the risk of stroke based on ultrasound image analysis of the atherosclerotic carotid plaque*, 11th IEEE-EMBS International Summer School and Symposium on Medical Devices and Biosensors (MDBS 2017), Southern University of Science and Technology, Shenzhen, China July 08-10, 2017.
9. *An Overview of M-Health Video Communication Systems*, University of Groningen, Netherlands, Dec. 13th, 2016. (jointly with Dr A. Panayides).
10. *Cardiovascular Informatics: Predicting the risk of stroke based on ultrasound image analysis of the atherosclerotic carotid plaque*, University of Groningen, Netherlands, Sept. 21st, 2015.
11. *Cardiovascular Informatics: Predicting the risk of stroke based on ultrasound image analysis of the atherosclerotic carotid plaque*, Presentation made at the workshop on: Advances and Challenges in Cardiovascular Ultrasound, Organised by S. Golemati and K.S. Nikita, **37th Annual Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)**, Milano, Italy, Aug. 25 – 29, 2015.
12. *An Overview of M-Health Video Communication Systems*, 11th. National & International Conference of the Hellenic Society for Systemic Studies (2015 HSSS): Systemics and Health Care, Athens, Greece, July 10-12, 2015.

13. *An Overview of M-Health Video Communication Systems*, IEEE EMBS Distinguished Lecture, IEEE RWW Radio & Wireless Week, San Diego, USA, Jan. 26, 2015.
14. *Multiscale Amplitude-Modulation Frequency-Modulation (AM-FM) Texture Analysis of Multiple Sclerosis in Brain MRI Images*, IEEE EMBS Distinguished Lecture, The Mind Research Network, University of New Mexico, Albuquerque, NM, USA, Jan. 20, 2015.
15. *An Overview of M-Health Video Communication Systems*, International Biomedical Engineering Conference (jointly with uHealthcare 2014), Guangju, Korea, Nov. 20-22, 2014.
16. *Linked2Safety – A next-generation, secure linked data medical information space, for semantically interconnecting EHRs and clinical trials systems, advancing patients safety in clinical research*, BHI-TC and J-BHI Sponsored Featured Symposia, Symposium – III: Medical and Health Informatics, IEEE International Conference on Biomedical & Health Informatics (BHI), Valencia, Spain, June 1-4, 2014.
17. *An Overview of M-Health Video Communication Systems*, IEEE EMBS Distinguished Lecture, IEEE EMBS Students Chapter, Faculty of Biomedical Engineering, New University of Lisbon, Lisbon, Portugal, March 6th, 2014.
18. *An Overview of M-Health Video Communication Systems*, IEEE EMBS Distinguished Lecture, IX National Conference on Biomedical Engineering Faculty of Biomedical Engineering, University of Porto, Porto, Portugal, March 7th, 2014.
19. *Cardiovascular Health Informatics: Predicting the Risk of Stroke Based on Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque*, The Rayne Institute, Division of Imaging Sciences & Biomedical Engineering, Department of Cardiovascular Imaging/Department of Biomedical Engineering, King's College London, Jan. 21st, 2014, London, UK.
20. *Cardiovascular Health Informatics; LiSIS: A Scientific Workflow Life Sciences Informatics In Silico Models and Tools in the Discovery of Anticancer Compounds*, IEEE EMBS Distinguished Lecture, 13th International Conference on Hybrid Intelligent Systems (HIS'2013), Dec. 4th – 6th, 2013, Hammamet, Tunisia.
21. *An Overview of M-Health Video Communication Systems*, IEEE EMBS Distinguished Lecture, Department of Informatics, University of Sfax, Sfax, Tunisia, Dec. 3rd, 2013.
22. *Cardiovascular Health Informatics: Predicting the Risk of Stroke Based on Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque*, IEEE EMBS Distinguished Lecture, International Conference on Engineering Sciences for Biology and Medicine (ESBM 2013), Co-organised by EMB Tunisia Chapter, Nov. 29 – Dec. 1st, 2013, Mahdia, Tunisia.
23. *An Overview of M-Health Video Communication Systems*, 13th IEEE International Conference on BioInformatics and BioEngineering (BIBE 2013), November 10-13, 2013, Chania, Greece.
24. *An Overview of M-Health Video Communication Systems*, IEEE EMBS Distinguished Lecture, First IEEE EMBS International Students Conference, Cairo University, Oct. 10th, 2013, Egypt.
25. *Cardiovascular Health Informatics: Predicting the Risk of Stroke Based on Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque*, IEEE EMBS Distinguished Lecture, Department of Medical Informatics & Biostatistics, University of Medicine and Pharmacy of Craiova, May 24th, 2013, Craiova, Romania.

26. *An Overview of M-Health Video Communication Systems*, IEEE EMBS Distinguished Lecture, The 8th International Symposium on, Advanced Topics In Electrical Engineering, The Faculty of Electrical Engineering, University Politehnica of Bucharest, May 23rd, 2013, Bucharest, Romania.
27. *Cardiovascular Health Informatics: Predicting the Risk of Stroke Based on Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque*, IEEE EMBS Distinguished Lecture, Department of Electrical and Computer Engineering, Technical University of Crete, May 15th, 2013, Crete, Greece.
28. *Abdominal Aortic Aneurysm Medical Video Transmission*, SenSIP Graduate Student Seminar Series, Arizona State University, January 2013, Phoenix, AZ, USA. (jointly with Dr A. Panayides).
29. *Keynote Talk: Cardiovascular Health Informatics: Predicting the Risk of Stroke Based on Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque*, 7th Hellenic Conference on Artificial Intelligence, SETN 2012, May 28-31, Lamia, Greece.
30. *eHealth in Cyprus*, Advanced Health Technologies and Medical Tourism, Regional Innovation Council, 24 February 2012, Crete, Cyprus.
31. *Atherosclerotic Plaque Ultrasound Video Encoding, Wireless Transmission, and Quality Assessment Using H.264*, 4th Hellenic Biomedical Technology Conference, National Technical University of Athens, 20 January 2012, Athens, Greece. (jointly with Dr A. Panayides)
32. *Recent Advances in Ultrasound Image Analysis of the Atherosclerotic Carotid Plaque for the Assessment of Stroke*, eHealth 2010, satellite workshop of IEEE EMBC 2010 in the Faculty of Medicine, University of Uruguay, 4 September 2010, Colonia, Uruguay.
33. *A Review of m-Health e-Emergency Systems*, Health Telematics Workshop, Faculty of Medicine, University of Molise, 6 April 2009, Campobasso, Italy.
34. *Texture and Morphological Analysis of Ultrasound Images of the Carotid Plaque for the Assessment of Stroke*, High Performance Computing & Simulation Conference (HPCS 2008), June 3 - 6, 2008, Nicosia, Cyprus.
35. *A Review of m-Health e-Emergency Systems*, IEEE ITAB 2007, Information Technology Applications in Biomedicine, November 8-11, Tokyo, Japan, 2007. Keynote Lecture.
36. *Intelligent Information Medical Systems*, Current Trends in Informatics, PCI'2007 11th Panhellenic Conference in Informatics, 18-20 May, Patras, Greece, 2007. Keynote Lecture.
37. *A Review of m-Health e-Emergency Systems*, International seminar "Devolution of Health Care – a New Regional Perspective", 17 November, University of Helsinki, Finland, 2006.
38. *Artificial Neural Networks in Medical Imaging Systems*, Project 'ΕΥΦΥΕΣ' Biomedical Research Institute, University of Ioannina, November 2004.
39. *Citizen-Centered eHealth Services*, to the International Conference on Computer Systems and Technologies – CompSysTech'04 PhD students' workshop, 17-18 June, Rousse, Boulgaria, 2004.
40. *Citizen-Centered eHealth Services*, to the Benchmarking Cyprus in IT, Session on eHealth, 28 May, Nicosia, Cyprus, 2004.
41. *Artificial Neural Networks in Medical Imaging Systems*, to the 1st MEDINFO International Conference on Medical Informatics & Engineering, 12-15 October, Craiova, Romania, 2003.

42. *Computational Intelligence in Medical Systems*: to Medical Informatics Europe – Special Topic Conference 2002: The e-evolution of IT in the Health Care Systems, Nicosia, Cyprus, March 8-10, 2002
43. *TELEGYN: Intraoperative Tele-histopathology and Tele-Consultation in Gynecological Cancer and Breast Cancer*, to 6th Marianna Lordos Seminar, The Cyprus Anti – Cancer Society, Larnaca, February 8-10, 2002.
44. *Adaptive Neural Network Imaging in Medical Systems*, to 35th Asilomar Conference on Signals, Systems, and Computers, Monterey, California, USA, November 4-7, 2001.
45. *Medical imaging fusion applications: An overview*, to 35th Asilomar Conference on Signals, Systems, and Computers, Monterey, California, USA, November 4-7, 2001.
46. *Expert Network for the Prevention of Stroke*, to HEALTH-NET-CEEC 2001: Informatics Tools to Restructure Health Care Services - First Meeting of the Central and Eastern European Countries, Targu Mures, Romania, October 18-20, 2001.
47. *Experience with a Mobile Unit for Health Care Provision via Telematic Support – the EU AMBULANCE&EMERGENCY-112 projects*, to Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, New Mexico, USA, December 1, 2000.
48. *Medical Informatics Infrastructure in Cyprus*, to Workshop on Regional Health Information Networks-Health for you-Health 4U, Supported by the European Commission-WISE project, December 9-10, Thessaloniki, Greece, 1999.
49. *Intelligent Diagnostic Systems in Biosignal Analysis and Medical Imaging*, to Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, New Mexico, USA, October 18, 1999.
50. *Computer Aided Classification of Carotid Plaques using Neural Networks and Multi-Texture Analysis*, 13th Congress of the European Chapter of the International Union of Angiology, EUROCHAP' 99, May 26-30, Rhodes, Greece, 1999.
51. *Advances in Diagnostic Methods – Histopathology: Neural Network System for the Analysis of Nuclei in Histopathological Sections*, to 5th Marianna Lordos Seminar, The Cyprus Anti – Cancer Society, Larnaca, November 28, 1998.
52. *MUAP Analysis Algorithms-Recent Developments*, to VI International Conference on Computerized and Quantitative EMG, September 23-25, Vigo, Spain, 1998.
53. *Intelligent Systems in Biosignal Analysis*, to Laboratory of Vision Systems, Department of Electrical and Computer Engineering, University of Texas at Austin, Austin, Texas, USA, May 18, 1998.
54. *Intelligent Systems in Biosignal Analysis*, to Department of Computer Science, University of Groningen, Holland, May 4, 1998.
55. *Intelligent Systems in Biosignal Analysis*, to Biomedical Engineering Centre, Consorzio per la Ricerca e l'Educazione Permanente, Politecnico di Torino, January 16, 1998.
56. *Neural Information Processing Systems in Medical Imaging*, to International Course on Noninvasive Cerebrovascular Investigations, Nicosia, March 22, 1996.

57. *Motor Unit Action Potential Signal Processing with Artificial Neural Networks*, to The X International Congress of EMG and Clinical Neurophysiology, Kyoto, Japan, October 15-19, 1995.
58. *Classification Performance of Motor Unit Action Potential Features*, to First Neuroscientists Conference: Neuromuscular Disorders Thessaloniki-Nicosia, Thessaloniki, Greece, June 3-4, 1994.
59. *Firing Pattern, Recruitment and Interference Analysis*, to Fifth International Conference on Computerized and Quantitative EMG, McMaster University, Hamilton, Ontario, Canada, May 18-21, 1993.
60. *Quantitative EMG and its Contribution to Clinical Diagnosis*, to Regional Workshop in Neurology and Neurogenetics, Limassol, Cyprus, October 16-20, 1992.
61. *Review of Image Processing Techniques in Histopathology and Cytology*, to the Third National Seminar of the Association of Medical Physics and Biomedical Engineering, Nicosia, Cyprus, May 23rd, 1992.
62. *Neural Networks and Computer Aided Electromyography*, to Association of Medical Physics and Biomedical Engineering, Nicosia, Cyprus, March 1991.
63. *Artificial Neural Networks, and Quantitative Electromyography: An Overview*, to Cadwell Labs, **Distinguished Annual Lecture**, Kennewick, Washington, USA, October 1990.
64. *Computer Aided Clinical Electromyography*, to CDSP Research Centre, Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, USA, October 1990.
65. *Recent Advances in Computer Aided Electromyography*, to the Department of Neurology, College of Physicians and Surgeons of Columbia University, NY, USA, October 1990.
66. *Neural Networks*, Workshop on Expert Systems, 4th International Conference on Computerized and Quantitative EMG, Johannes-Gutenberg-Universität, Mainz, Germany, September 13-15th, 1990.
67. *Artificial Neural Networks in Clinical Electromyography*, to the Neurophysiology Group, Cadwell Labs, Kennewick, Washington, USA, September 1989.
68. *Numerical Pattern Recognition in the Automatic Analysis of Motor Unit Potentials*, to the Special Interest Group of Computer Aided Electromyography, 35th Annual Scientific Meeting of the American Association of Electromyography and Electrodiagnosis, NY, USA, September 1988.
69. *Numerical Pattern Recognition in the Automatic Analysis of Motor Unit Potentials: Technical Considerations and Clinical Practice*, to the Neurophysiology Group, Medelec Ltd, Old Working, Surrey, UK, August 1988.
70. *Numerical Pattern Recognition in the Automatic Analysis of Motor Unit Potentials: Hands on Experience*, to the IIIrd International Conference on Quantitative EMG, Larnaca, Cyprus, June 5-8th, 1988.

IX. REFERENCES

References will be provided by (given in alphabetical order):

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APPENDIX A RESEARCH STATEMENT

Part 1 – DEVELOPMENT OF MEDICAL DIAGNOSTIC SYSTEMS

A.1 Development of medical diagnostic and mobile health systems

Computer-aided diagnosis systems that provide a unique integration of a great variety of distinctly different technologies such as signal/image/video acquisition, preprocessing, feature extraction, dimensionality reduction, classification, and clinical decision making were developed. The reliability and robustness of the developed diagnostic systems is evident in their integration into clinical practice in several leading hospitals throughout the world. Furthermore, mHealth eEmergency systems were developed that led to the effective wireless communication of critical biosignals and ultrasound video through noisy channels. More specifically, the systems developed cover the following areas:

- Ultrasound Imaging: An Integrated System for the Assessment of the Risk of Stroke
- MRI: Quantitative Texture Analysis of Brain White Matter Lesions in Multiple Sclerosis. Assessment of Alzheimer's Disease Based on Texture Analysis of the Entorhinal Cortex.
- Endoscopy Imaging: A CAD System for the Assessment of Gynaecological Cancer
- Microscopy Imaging: Breast Cancer Biopsy image Analysis Support System (BASS) and Electron Microscopy (EM) Muscle Imaging System
- Biosignal Analysis: Electromyographic (EMG) Signal Analysis for Neuromuscular Disorders
- mHealth eEmergency Systems: Diagnostically Driven Efficient Video Compression Algorithms
- mHealth Interventions Based on X Reality Applications for Patients with Dementia and Breast Cancer.

Two of these systems are briefly summarized.

Ultrasound image analysis of the atherosclerotic carotid plaque for the assessment of the risk of stroke

An integrated modular neural network multi-feature/multi-classifier diagnostic system, including normalization, despeckle filtering, plaque segmentation, texture feature extraction, and neural network classification has been developed for differentiating between asymptomatic and symptomatic plaques in ultrasound imaging of the carotid for the assessment of the risk of stroke. This is the only carotid plaque diagnostic system that covers all image processing steps from acquisition to diagnosis. This system is used in several cardiovascular clinics in North America, Europe, and Asia, including Columbia University, McGill University, Imperial College, Tromsø University, and others. Moreover, an automated system for segmenting the intima-media complex as well as the intima layer and the media layer of the carotid artery was proposed that showed that the media layer thickness increases with age whereas the grey-scale median decreases with age. These new features could be used as prognostic biomarkers for atherosclerosis. The adoption of these techniques represents a shift of emphasis from the standard practice of visual assessment of the plaque images to a normalized, re-producible, and quantitative methodology.

Mobile eHealth systems in the provision of advanced eEmergency services

One of the first integrated eEmergency systems funded by 3 EU projects has been pioneered by our team. The system allows the transmission of vital biosignals (3 or 12 lead ECG, oxygen saturation, heart rate, blood pressure, temperature, and respiration) and video of the patient. The system was piloted in Sweden, Italy, Greece, and Cyprus. Recently, the system has been updated to support the transmission of high-resolution low-delay and clinically robust ultrasound video over mobile-WiMAX networks, introducing the concept of diagnostically-driven video encoding. Furthermore, this work has been extended to the use of HEVC standard combined with despeckle filtering that can yield significant bitrate savings compared to H.264/AVC. Moreover, the system has been clinically exploited for remote echocardiography using a tele-operated robot over commercial 4G/LTE wireless networks.

A.2 Ongoing and Future Work

Explainable Models for Personalised Integrated Stroke Ultrasound Video Analysis

Approximately 15% of all strokes are the result of carotid bifurcation atherosclerosis but at present, there is no established set of features that can identify all the potentially unstable and high-risk plaques. The overall objective of this work is to develop an integrated intelligent system for the stratification of stroke risk patients combining different clinical and imaging risk factors but based on the morphology and motion characteristics of the ultrasound video images of carotid bifurcation plaques producing moderate to severe stenosis (more than 70%). To achieve this objective we will: (1) Develop atherosclerotic video modelling and estimation using adaptive multiscale Amplitude Modulation-Frequency Modulation (AM-FM) texture analysis system representations.

Video modelling and estimation will be based also on motion, stress and strain analysis. (2) Develop stroke risk assessment using explainable models. Modelling will be based on logistic regression with polynomial transformation and feature visualization, residual networks with residual image analysis and 3D CNN (Convolutional Neural Networks) with convolutional layer visualization, derived based on optimized hierarchical modelling. (3) Develop personalized modelling by monitoring disease progression using follow-up video. Carotid ultrasound video modelling and analysis will be based on 1200 cases with severe stenosis followed for a period of 4-5 years which will be contributed to the project by the Asymptomatic Carotid Stenosis and Risk of Stroke (ACSRS) study group captured from 70 EU vascular centres. We expect that our system will be able to identify high risk groups of (a) asymptomatic patients that will contain 90% of strokes that will occur during follow-up and (b) of symptomatic patients that will need urgent operation within 24-48 hours. Identifying asymptomatic patients at high risk should spare 75% of patients from unnecessary operations with a saving of 1.5 billion Euro per year in Europe.

It is expected that this work will lead to a European Research Council (ERC) Advanced Grant application in 2021.

Normal Appearing Brain White Matter Changes in Relapsing Multiple Sclerosis in Serial MRI Scans

There is a clinical interest in identifying normal appearing white matter (NAWM) areas in brain T2-weighted (T2W) MRI scans in multiple sclerosis (MS) subjects, which are susceptible to disease development and finding potential associations between texture feature changes and disease progression. Methods: The subjects investigated had a first demyelinating event (Clinically Isolated Syndrome-CIS) at baseline (Time0), and the NAWM0 (i.e. NAWM at Time0) of the brain tissue was subsequently converted to demyelinating plaques (as evaluated in a follow up MRI at Time6-12). 38 untreated subjects that had developed a CIS, had brain MRI scans within an interval of 6-12 months (Time6-12 at follow-up). An experienced MS neurologist manually delineated the demyelinating lesions at Time0 (L0) and at Time6-12 (L6-12). Areas in the Time6-12 MRI scans, where new lesions had been developed, were mapped back to their corresponding NAWM areas on the Time0 MR scans (ROIS0). In addition, contralateral ROIs of similar size and shape were segmented on the same images at Time0 (ROISC0) to form an intra-subject control group. Following that, texture features were extracted from all prescribed areas and MS lesions. Results: Texture features were used as input into Support Vector Machine (SVM) models to differentiate between the following: NAWM0 vs ROISC0, NAWM0 vs NAWM6-12, NAWM0 vs L0, NAWM6-12 vs L6-12, ROIS0 vs L0, ROIS0 vs L6-12 and ROIS0 vs ROISC0, where the corresponding % correct classifications scores were 89%, 95%, 98%, 92%, 85%, 90% and 65% respectively. Conclusions: Texture features may provide complementary information for following up the development and progression of MS disease. Future work will investigate the proposed method on more subjects.

Extracting Explainable Assessments of Alzheimer's disease via Machine Learning on brain MRI imaging

A plethora of machine learning and deep learning methods are used for the assessment of Alzheimer's Disease (AD) from brain structural changes as seen in Magnetic Resonance Imaging (MRI) with highly satisfactory results. However, these models are black-box and lack an explicit declarative knowledge representation and thus there is a difficulty in generating the underlying explanatory imaging structures. The objective of this study was to investigate the usefulness of rule extraction in the assessment of AD using decision trees (DT) and random forests (RF) algorithms and integrating the extracted rules within an argumentation-based reasoning framework in order to make the results easy to interpret and explain. The DT and RF algorithms were applied on brain MRI images acquired from normal controls (NC) and AD subjects. The KNIME analytics platform was used to compute the DT and the R project was used for the RF. The argumentation model implemented in the Gorgias framework achieved an average accuracy of 91%, exhibiting improved results compared to the models of DT and RF. The overall performance of all models in this study agree with other studies. In addition, the explanations given by our approach for the various possible predictions provide a more useful and complete assessment of the state of the patient/case at hand. This study demonstrated the usefulness of rule extraction in the assessment of AD based on MRI features and the positive results of the use of the argumentation based symbolic reasoning for composing and interpreting the ML results.

Physical Training for People with Dementia in Confined Mental Health Units

In recent years, there has been growing interest in designing non-pharmacological interventions to improve the quality of life for People with Dementia (PwD) who face motor impairments. This work investigates the feasibility of using Virtual Reality (VR) technologies for the rehabilitation of 20 patients with moderate to severe dementia residing in a confined psychiatric hospital and discusses the impact of this interactions on motor training. To accomplish this a pilot study with patients performing three upper limb physiotherapy tasks in VR was carried out. The issues encountered during the testing and execution of the experimental tasks are discussed and a set of guidelines and recommendations for the future deployment of VR in healthcare services is provided.

Part 2 – ESTABLISHING THE BIOMEDICAL ENGINEERING RESEARCH CENTRE (BERC)

In this part, a proposal is made towards the establishment of the *Biomedical Engineering Research Centre (BERC)*. This is based on the BERC proposal that was approved by the Council of the University of Cyprus in Nov. 2016 and subsequently ratified by the House of Representatives and announced in the Official Newspaper of the Republic of Cyprus in December 2019. Moreover, this proposal is also based on the EU H2020-WIDESPREAD-04-2017 Teaming Phase 2 grant application entitled *Integrated Precision Medicine Technologies Research Centre of Excellence (IPMT)*⁵, that was submitted in Nov. 2018.

A.3 Executive Summary

Motivation: Existing centers in Cyprus like the Bank of Cyprus Oncology Center and the Cyprus Institute of Neurology and Genetics focus on patient care in a focused research/clinical field. Currently, in the University of Cyprus there are about 20 teams conducting research in the biomedical sciences and engineering fields. However, they work mainly independently and in relatively small/medium scale projects, due to limited resources and focused expertise. BERC targets to bring these individuals together in forming a new dynamic team that will combine the academic knowledge and experience of its clinical and scientific collaborators to address large-scale problems. The integration and synergy of various scientific disciplines and spatial scales (nano/micro/macro) is a key component for the development of innovative solutions that could lead to the offering of precision medicine interventions.

Vision: The vision of the **Biomedical Engineering Research Centre** is to be established as an inspiring, interdisciplinary, research and innovation centre, which will become a world leader in **the development of new technologies to further enable and accelerate the development, translation, and application of precision medicine**. The theme of the Centre is not only **scientifically exciting** and **clinically relevant**, it is also **very timely**. Over the last decade, scientific knowledge and technological innovations have matured to the point where the stage is ready for the next technological breakthroughs. However, to achieve the sophistication required for precision medicine technologies, a multipronged strategy is required as is evident by the limited success of research efforts focusing on single technological approaches. The Centre will integrate the necessary building blocks for the implementation of complex precision technologies: (i) **eHealth Systems**, (ii) **Computational Biology, Biophysics and In silico Modelling**, (iii) **Bioinformatics & Systems Medicine**, (iv) **Sensing, Electronics and Embedded Systems**, (v) **Medical Imaging**, (vi) **Medical Physics and Technology**, (vii) **Bio Materials, Drugs and Therapeutics**, and (viii) **Biomechanics**, with the support of (ix) **Molecular/Cellular Biosciences** and (x) **Clinical Development & Validation**. The Centre aims to focus the application of the developed technologies on key clinical fields: (i) **Cardiovascular**, (ii) **Pulmonology**, (iii) **Oncology**, (iv) **Neurology** and other case studies. Although the scope of the Centre may appear broad, these technologies will be generalized to tackle the common underlying, multifactorial, pathophysiological pathways, overcoming the current significant barriers in precision medicine and, thus, achieving widespread clinical utility and impact. The Centre will achieve a level of focused integration that does not currently exist but is strongly recommended by many EU and international initiatives and consortia.

The proposed Centre will establish a complete ecosystem to (i) nurture interdisciplinary convergence and integration, with common focus, leading to excellence and sustainability, (ii) develop and expand an enabling infrastructure integrating specimen and data collection and advanced analytics, (iii) establish an interdisciplinary education and training platform for human capital development, stakeholder engagement, and a common “language” for the varied interdisciplinary fields involved, (iv) spearhead innovation and entrepreneurship for long-term financial sustainability and regional/European economic growth, and at the same time (v) orchestrate the necessary organisational transformation to create a flexible, expanding, Centre with a thriving interdisciplinary population.

Implementation work plan: The BERC workplan will be implemented under the following three phases: **Phase 1 Establishment & Infrastructure & Capacity Building – Years 1 to 2:** Phase 1 focuses on establishing the BERC and setting up the administrative structure of the Centre, developing its strategies and internal procedures (innovation management, recruitment, hiring, retention, and training), hiring personnel, developing the infrastructure, and completing the formation of the Centre. **Phase 2 Consolidation & Growth – Years 3 to 5:** Phase 2 emphasises on growth by having fully operational infrastructure, attracting significant funding from the EU and other resources, and becoming a point of reference across Europe for research on precision medicine technologies. **Phase 3: Achieving Sustainability - Years 6 to 7:** Phase 3 is the period of transition to full self-sustainability.

Concluding, it is anticipated that the establishment of BERC will lead to the development of innovative biomedical engineering solutions for the benefit of the citizen.

⁵ Jointly submitted with Prof. C. Pitris of the Dept. of Electrical and Computer Engineering as Co-PI, where a total of 36 faculty members participated from the School of Pure and Applied Sciences, the School of Engineering and the School of Medicine. Although the IPMT proposal was not awarded, significant and extensive effort was invested in preparing it and it has all the constituent components needed for the establishment of BERC.

APPENDIX B SELECTED PUBLICATIONS

- J.1 A.S. Panayides, M.S. Pattichis, M. Pantziaris, A.G. Constantinides, C.S. Pattichis, *The Battle of the Video Codecs in the Healthcare Domain-A Comparative Performance Evaluation Study Leveraging VVC and AV1*, **IEEE Access**, vol. 8, pp. 11469-11481, 2020. DOI: [10.1109/ACCESS.2020.2965325](https://doi.org/10.1109/ACCESS.2020.2965325).
- J.2 S. Leandrou, D. Lamnisos, I. Mamais, P. Kyriacou, C. S. Pattichis, *Assessment of Alzheimer's Disease Based on Texture Analysis of the Entorhinal Cortex*, **Frontiers in Aging Neuroscience**, vol. 12, Article 176, pp. 1-12, 2020. <https://doi.org/10.3389/fnagi.2020.00176>.
- J.3 A.S. Panayides, M. S. Pattichis, S. Leandrou, C. Pitris, A. Constantinidou, and C.S. Pattichis, *Radiogenomics for Precision Medicine with A Big Data Analytics Perspective*, **IEEE Journal of Biomedical and Health Informatics**, vol. 23, no. 5, pp. 2063-2079, 2019. DOI: [10.1109/JBHI.2018.2879381](https://doi.org/10.1109/JBHI.2018.2879381).