

CURRICULUM VITAE

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Assistant Professor in Biomedical Engineering

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National Kapodistrian University of Athens, Greece

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1. SHORT CURRICULUM VITAE

1.1. Personal data

Name: Spyretta Golemati
Place of birth: Athens, Greece
Date of birth: 18 March 1970
Work address: Ipsilandou 45-47, Athens 10676, Greece
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1.2. Current position

Assistant Professor in Biomedical Engineering
Intensive Care Unit – Evangelismos Hospital
Medical School, National & Kapodistrian University of Athens
Greece

1.3. Academic qualifications

- Ph.D. in Biophysics, Medical Physics and Bioengineering, Imperial London, UK, 2000.
- M.Sc. in Engineering and Physical Science in Medicine, Imperial College London, UK, 1995.
- Diploma of Imperial College in Engineering and Physical Science in Medicine, Imperial College London, UK, 1995.
- Diploma in Mechanical Engineering, Department of Mechanical Engineering, National Technical University of Athens, Greece, 1994.

1.4. Academic appointments

- Assistant Professor in Biomedical Engineering, Medical School, National and Kapodistrian University of Athens, 2015-today
- Visiting Research Scientist, Centre for Visual Computing, Ecole Centrale de Paris, France, 05/06/2013 - 18/07/2013
- Visiting Research Scientist, Department of Biomedical Engineering, Columbia University in the city of New York, USA, 01/03/2013 - 31/05/2013
- Lecturer in Biomedical Engineering, Medical School, National and Kapodistrian University of Athens, 2008-2015
- Visiting Assistant Professor, Department of Computer Science and Biomedical Informatics, University of Central Greece, 2007-2008
- Visiting Assistant Professor, Department of Nursing, University of Peloponnese, 2005-2006, 2007-2008
- Research associate, Biomedical Simulations and Imaging Laboratory, Department of Electrical and Computer Engineering, National Technical University of Athens, 2000-2008
- Research associate, Medical School, National and Kapodistrian University of Athens, 2002-2008
- Visiting Associate Professor, Department of Electronic and Computer Engineering, Technical University of Crete, 2002-2006
- Visiting Lecturer, Department of Nursing, National and Kapodistrian University of Athens, 2000-2001
- Researcher, Physiological Flow Studies Group, Department of Bioengineering, Imperial College London, UK, 1995-1999

1.5. Scholarships – Awards

- Scholarship of the Greek States Scholarships Foundation (I.K.Y.), Postdoctoral Fellowships Program, 2001-2002
- Lemos Foundation Award, 2000
- Scholarship of the Greek States Scholarships Foundation (I.K.Y.), Postgraduate Fellowships Program, 1997-2000
- Scholarship of the Lemos Foundation, Postgraduate Studies Program, 1995-1997

1.6. Research areas

- Vascular ultrasound image analysis
- Digital biosignal processing
- Computer-based clinical decision support systems
- Vascular mechanics
- Respiratory mechanics

1.7 Scientific and research activities

- Associate Editor of Elsevier's journal Ultrasonics
- Participation to 7 funded European and national research projects
- Reviewer/evaluator of European and national research projects
- Reviewer of international scientific journals and conference proceedings
- Invited lectures in scientific conferences, seminars, lecture series in the areas of biomedical engineering and ultrasound imaging
- Organisation of workshop/special sessions in international scientific conferences

1.8 Publications

- Co-editor of 1 book (to be published by Springer in 2017)
- 31 papers published in international peer-review journals (19 in ultrasound-related topics)
- 44 papers published in international conference proceedings (38 in ultrasound-related topics)
- 10 book chapters (4 in ultrasound-related topics)
- 18 abstracts in international scientific conferences (9 in ultrasound-related topics)

1.9 Teaching activities

- Teaching of undergraduate courses at the University of Athens, the Technical University of Crete, the University of Peloponnese, and the University of Central Greece (2001-2008)
- Lectures in the context of a postgraduate course, Medical School, National Kapodistrian University of Athens
- Co-supervision of 15 diploma theses
- Member of the advisory committee of 3 Ph.D. theses
- Online e-teaching in the context of a postgraduate course, Democritus University of Thrace

1.10 Membership in scientific societies

- Member of the Institute of Electrical and Electronic Engineers (IEEE)
 - Engineering in Medicine and Biology Society (IEEE-EMBS)
 - Ultrasonics Ferroelectrics and Frequency Control (IEEE-UFFC)
- Member of the Technical Chamber of Greece (TEE)
- Member of the Hellenic Atherosclerosis Society

2. ANALYSIS OF RESEARCH, SCIENTIFIC AND TEACHING ACTIVITIES

2.1. RESEARCH AREAS

Vascular ultrasound image analysis

- *Analysis and quantification of tissue motion from image sequences.* Estimation of the two-dimensional motion of the arterial wall from b-mode ultrasound scans. Comparative assessment of different methodologies, including block matching, adaptive block matching and optical flow, in *in silico* and *in vivo* data. Stroke risk stratification using motion-derived kinematic features. Definition of scanner settings values for reliable image recording and analysis for motion estimation.

Relevant journal publications: J2, J6, J9, J11, J12, J15, J17

- *Analysis of echogenicity and texture.* Application of different echogenicity and texture analysis methods (statistical, model-based, etc.) for the estimation of tissue properties of symptomatic and asymptomatic atheromatous plaque in the carotid artery. Relationship between echogenicity and biochemical markers.

Relevant journal publications: J1, J3, J5, J8, J10, J19

- *Image segmentation.* Automatic recognition of arterial wall boundaries using the Hough transform. Automatic recognition of arterial wall lumen using image statistics.

Relevant journal publications: J7, J18

Digital biosignal processing

- *Mathematical modelling and feature extraction.* AM/FM modelling of sleep spindles from electroencephalograms – estimation of instantaneous envelope and instantaneous frequency – extraction of quantitative indices.

Relevant journal publications: J29, J31

- *Estimation of phase differences between signal pairs.* Comparative study of different methods for the estimation of phase differences between signals of thoracic volumes. Methods include phase angle of Fourier transform, paradoxical movement, Lissajous figure, maximal linear correlation (Pearson) and least squares filtering.

Relevant conference proceedings publication: B1.A.i.1.C43

- *Estimation of signal entropy.* Comparison of entropy measures for estimating severity of obstructive sleep apnoea from overnight pulse oximetry data.

Relevant conference proceedings publication: B1.A.i.1.C44

Computer-based clinical decision support systems

- *Systems for support of diagnostic decisions.* Development of diagnostic decision support systems, which include data pre-processing, automatic or semi-automatic definition of regions of interest, feature extraction, feature selection and classification. Development of a web-based platform for optimal personalised management of atherosclerotic patients. Stroke risk stratification using motion-derived kinematic features.

Relevant journal publications: J4, J5, J16, J17

- *Radiation treatment planning system.* Development of a telematics-enabled virtual simulation system for radiation treatment planning.

Relevant journal publication: J22

Vascular mechanics

- *Kinematic and mechanical properties of the normal (non-atheromatous) carotid artery wall in healthy and diseased (atheromatous) subjects.* Estimation of radial and longitudinal displacements and derived strains, including shear strains. Investigation of tissue anisotropy through differences between radial and longitudinal kinematics. Motion attenuation through tissue, as a function of the distance from the wall-lumen interface. Differences in motion patterns in young vs. elderly subjects, and in symptomatic vs. asymptomatic patients with atheromatous plaque. Estimation of the stress-strain curve and derived Young's modulus.

Relevant publications: J2, J11, J15, B1.A.i.1.C38

- *Motion patterns of atheromatous plaque.* Estimation of radial, longitudinal and shear strain of symptomatic and asymptomatic plaque. Differences in motion patterns in symptomatic vs. asymptomatic plaques. Investigation of bilateral (left vs. right side) asymmetry in kinematic features of asymptomatic plaque.

Relevant publications: J12, J15B1.A.i.1.C32

Respiratory mechanics

- *Respiratory mechanics in healthy subjects and athletes.* Kinematics of breathing during exercise using optoelectronic plethysmography. Oxygen kinetics after exercise with flow limitation. Effects of hypoxia in diaphragmatic fatigue of highly trained athletes. Measurement of respiratory muscle blood flow using infrared spectroscopy.

Relevant journal publications: J20, J24, J26, J27

- *Respiratory mechanics in subjects with chronic obstructive pulmonary disease.* Identification of different patterns of dynamic hyperinflation at rest and during exercise. Chest wall volume regulation during exercise and effects of rehabilitation.

Relevant journal publications: J21, J25, J28

2.2 SCIENTIFIC AND RESEARCH ACTIVITIES

Editorial Board Member

1. Ultrasonics (Elsevier), 2012-today

Participation to funded research programmes

1. John S. Latsis Public Benefit Foundation - Study 2013, "Measurement and significance of texture and elasticity indices in ultrasound images of subclinical carotid atheromatous lesions toward novel markers of cardiovascular risk", Jan 2013 - Dec 2013. [role: Coordinator]
2. G.S.R.T. – E.P.E.T.2 in Information Technology, "Development of system for virtual simulation and treatment planning in clinical radio-oncology (GALENOS)", Mar 2000 - Apr 2001 [role: Researcher]
3. EC – Quality of Life QLRT-2001-0893, "Computer-aided rehabilitation of respiratory disabilities", Jan 2003 - Dec 2006 [role: Researcher]
4. ABBOT Hellas – 70/3/4721, "Double blind randomized study with oral buflomedil to treat intermittent claudication in patients with chronic lower limb ischaemia and correlation with placebo", Jun 2003 – May 2004 [role: Researcher]
5. EC – Networks of Excellence, "Computational intelligence for BioPattern analysis to support eHealth", Feb 2004 - Dec 2007 [role: Researcher]
6. EPEAEK – PYTHAGORAS II, "Multiparametric diagnostic and therapeutic approach in cardiovascular risk in metabolic syndrome and diabetes. Experimental study of reversing the development of atherosclerosis", Mar 04 - Mar 2006 [role: Researcher]
7. G.S.R.T. - COOPERATION 2009, "Carotid atherosclerosis: a multi-disciplinary approach toward optimal management of symptomatic and asymptomatic subjects", Nov 2011 – Nov 2014 [role: Researcher]

Reviewer/evaluator of European and national research projects

1. Member of the review committee of the EC-funded HORIZON 2020 project "SocketMaster: Development of a Master Socket for optimised design of prosthetic socket for lower limb amputees", DG CNECT, January 2016.
2. Member of the review committee of the EC-funded 7th FP project "Air Prom: Airway disease predicting outcomes through patient specific computational modelling", DG INFSO, May 2012, May 2014, May 2015, October 2015.
3. Evaluator of proposals and reviewer of projects in the context of different actions of the General Secretariat of Research and Technology (Ministry of Education), 2008-today.

Reviewer in scientific journals

Ultrasound in Medicine and Biology, IEEE Transactions on Medical Imaging, Stroke, Computerized Medical Imaging and Graphics, Computer Methods and Programs in Biomedicine, IEEE Transactions on Information Technology in Biomedicine, IEEE Transactions on Biomedical Engineering, Pattern Recognition, IEEE Journal of Biomedical and Health Informatics (formerly IEEE Transactions on Information Technology in Biomedicine), Artificial Intelligence in Medicine, Annals of Biomedical Engineering, Computers in Biology and Medicine, Age, Medical Physics.

Invited lectures/presentations

1. *Applying biomedical engineering in clinical practice*, Department of Electrical and Computer Engineering, Democritus University of Thrace, 04 December 2015.
2. *Elastography of carotid plaque*, Attikon Hospital, Department of Vascular Surgery, National Kapodistrian University of Athens, 20 November 2015.
3. *Ultrasound image analysis of the carotid artery: a powerful tool towards early stroke prediction and more than that*, Parc Recerca Biomedica Barcelona, Barcelona, 16 November 2015.
4. *Elastography of the cardiovascular system*, Euroson, Athens, 06-08 November 2015.
5. *Elastography of the cardiovascular system*, Euroson School – Ultrasound Elastography, Athens, 15-16 February 2014.
6. *Ultrasound-based carotid artery elastography in the radial and longitudinal directions*, Euroson School – Ultrasound Elastography, Athens, 21-22 January 2012.
7. *Computerised analysis of lung computed tomography images*, 13th Interdepartmental Postgraduate Seminar – Respiratory Failure: Diagnostic Approach and Therapeutic Treatment, Athens, 24-25 October 2008.
8. *Quantification of the morphology of sleep spindles*, 4th Panhellenic Interdisciplinary Conference in Sleep Research, Athens, 02-04 June 2006.
9. *Biomedical technology and the diagnosis of early breast cancer*, Breast Unit, 1st Department of Propaedeutic Surgery, Hippokration Hospital, 2nd Annual Scientific Meeting, Athens, 15 May 2004.
10. *Digital medical image processing: texture and motion analysis*, Hellenic Society of Medical Oncology, 10th Panhellenic Conference in Clinical Oncology, Athens, 29-31 March 2001.
11. *The identification of stable and unstable atherosclerotic plaques using ultrasound: implications for the medical and surgical management of the arteriopath*, Irvine Laboratory, St Mary's Hospital, Imperial College of Science, Technology and Medicine, University of London London, UK, 10 April 1999.
12. *Plaque motion analysis*, 6th Panhellenic Conference in Angiology/Vascular Surgery, Athens, 22-24 January 1999.

Organisation of pre-conference workshop and conference special sessions

1. *Advances and challenges in cardiovascular ultrasound*, IEEE EMBC 2015, Engineering in Medicine and Biology Conference, Milan, Italy, 25-30 August 2015. [pre-conference workshop]
2. *Cardiovascular ultrasound image analysis: a powerful tool toward valid, non-invasive and low-cost disease diagnosis*, ICU 2015, International Congress of Ultrasonics, Metz, France, 11-14 May 2015. [structured session]
3. *Toward re-stratifying cardiovascular risk: the role of ultrasound imaging informatics*, IEEE BHI 2014 Int Conf Biomed Health Inf, Valencia, Spain 01-04 June 2014. [special session]

Hospital Committee Member

Member of the committee for approval of experimental protocols in the First Intensive Care Unit of the University of Athens

2.3 SCIENTIFIC PUBLICATIONS

Book co-editor

Cardiovascular Computing: Methodologies and Clinical Applications. S.Golemati, K.S.Nikita (eds), Springer 2017.

Theses

- T1 S.Golemati. Motion analysis of carotid atherosclerotic plaque from B-mode ultrasound. Doctoral thesis, Department of Bioengineering, Imperial College London, UK, 2000.
- T2 S.Golemati. The analysis of pressure and velocity data in patients performing the Valsalva manoeuvre. Postgraduate diploma thesis, Department of Bioengineering, Imperial College London, UK, 1995.
- T3 S.Golemati. Fluid-mechanical analysis of coronary arteriogram. Graduate diploma thesis, Department of Mechanical Engineering, National Technical University of Athens, 1994.

Publications in international refereed journals

Journal publications relevant to the field of vascular ultrasound image analysis

- J1 P.Asvestas, **S.Golemati**, G.K.Matsopoulos, K.S.Nikita, and A.N.Nicolaidis. Fractal dimension estimation of carotid atherosclerotic plaque from B-mode ultrasound: a pilot study. *Ultrasound Med Biol* 2002; 28(9): 1129-1136.
- J2 **S.Golemati**, A.Sassano, M.J.Lever, A.A.Bharath, S.Dhanjil, and A.N.Nicolaidis. Carotid artery wall motion estimated from B-mode ultrasound using region tracking and block-matching. *Ultrasound Med Biol* 2003; 29(3): 387-399.
- J3 **S.Golemati**, T.J.Tegos, A.Sassano, K.S.Nikita, and A.N.Nicolaidis. Echogenicity of B-mode ultrasound images of the carotid artery – Work-in-progress. *J Ultrasound Med* 2004; 23: 659-669.
- J4 J.S.Stoitsis, **S.Golemati**, and K.S.Nikita. A modular software system to assist interpretation of medical images – Application to vascular ultrasound images. *IEEE Trans Instr Meas* 2006; 55(6): 1944-1952.
- J5 S.G.Mougiakakou, **S.Golemati**, I.Gousias, and K.S.Nikita. Computer-aided diagnosis of carotid atherosclerosis based on ultrasound image statistics, Laws' texture and neural networks. *Ultrasound Med Biol* 2007; 33(1): 26-36.
- J6 **S.Golemati**, J.Stoitsis, and K.S. Nikita. Motion analysis of the carotid artery wall and plaque using B-mode ultrasound. *Vasc Dis Prevent* 2007; 4: 296-302.
- J7 **S.Golemati**, J.Stoitsis, E.G.Sifakis, T.Balkizas, and K.S.Nikita. Using the Hough Transform to segment ultrasound images of longitudinal and transverse sections of the carotid artery. *Ultrasound Med Biol* 2007; 33(12): 1918-1932.
- J8 N.P.E. Kadoglou, T.Gerasimidis, **S.Golemati**, A.Kapelouzou, P. Karayannacos, C.D.Liapis. The relationship between serum levels of vascular calcification inhibitors and carotid plaque vulnerability. *J Vasc Surg* 2008;47(1): 55-62.
- J9 **S.Golemati**, J.S.Stoitsis, D.A.Perakis, E.Varela, A.Alexandridi, C.H.Davos, K.S.Nikita. Carotid artery motion estimation from sequences of B-mode ultrasound images – effect of scanner settings and image normalization. *IEEE Trans Instr Meas* 2009; 58(7): 2102-2112.
- J10 N.Tsiaparas, **S.Golemati**, I.Andreadis, J.Stoitsis, I.Valavanis, K.S.Nikita. Comparison of multiresolution features for texture classification of carotid atherosclerosis from B-mode ultrasound. *IEEE Trans Inf Technol Biomed* 2011; 15(1): 130-137.
- J11 A.Gastouniotti, **S.Golemati**, J.Stoitsis, K.S.Nikita. Comparison of Kalman-filter-based approaches for block matching in arterial wall motion analysis from B-mode ultrasound. *Meas Sci Technol* 2011; 22(11): 1-9.
- J12 **S.Golemati**, J.S.Stoitsis, A.Gastouniotti, A.C.Dimopoulos, V.Koropouli, K.S.Nikita. Comparison of block matching and differential methods for motion analysis of the carotid artery wall from ultrasound images. *IEEE Trans Inf Technol Biomed* 2012; 16(5): 852-858.

- J13 N.N.Tsiaparas, **S.Golemati**, I.Andreadis, J.Stoitsis, I.Valavanis, K.S.Nikita. Directional multiscale texture classification of ultrasound images of carotid atherosclerosis from b-mode ultrasound. *Meas Sci Technol* 2012; 23: 10pp.
- J14 **S.Golemati**, A.Gastouniotti, K.S.Nikita. Toward novel noninvasive and low-cost markers for predicting strokes in asymptomatic carotid atherosclerosis: the role of ultrasound image analysis. *IEEE Trans Biomed Eng* 2013; 60(3): 652-658.
- J15 A.Gastouniotti, **S.Golemati**, J.S.Stoitsis, K.S.Nikita. Carotid artery wall motion analysis from B-mode ultrasound using adaptive block matching: in silico evaluation and in vivo application. *Phys Med Biol* 2013; 58(24): 8647-8666.
- J16 A.Gastouniotti, V.Kolias, **S.Golemati**, N.N.Tsiaparas, A.Matsakou, J.S.Stoitsis, N.P.Kadoglou, C.Gkekas, J.D.Kakisis, C.D.Liapis, P.Karakitsos, I.Sarafis, P.Angelidis, K.S.Nikita. CAROTID - a web-based platform for optimal personalized management of atherosclerotic patients. *Comput Meth Programs Biomed* 2014; 114(2): 183-193.
- J17 A.Gastouniotti, S.Makrodimitris, **S.Golemati**, N.Kadoglou, C.Liapis, K.S.Nikita. A novel computerized tool to stratify risk in carotid atherosclerosis using kinematic features of the arterial wall. *IEEE J Biomed Health Inform* 2014; 19(3): 1137-1145.
- J18 E.G.Sifakis, **S. Golemati**. Robust carotid artery recognition in longitudinal B-mode ultrasound images. *IEEE Trans Image Process* 2014; 23(9): 3762-3772.
- J19 Lechareas S, Yanni EA, **Golemati S**, Chatziioannou A, Perrea D. Ultrasound and biochemical diagnostic tools for the characterization of vulnerable carotid atherosclerotic plaque. *Ultrasound Med Biol* 2016; 42(1): 31-43.

Other journal publications

- J20 I.Vogiatzis, A.Aliverti, **S.Golemati**, O.Georgiadou, A.LoMauro, E.Kosmas, E.Kastanakis, S.Nanas, Ch.Roussos. Respiratory kinematics by optoelectronic plethysmography during exercise in men and women. *Eur J Appl Physiol* 2005; 93: 581-587.
- J21 I.Vogiatzis, O.Georgiadou, **S.Golemati**, A.Aliverti, E.Kosmas, E.Kastanakis, N.Geladas, S.Nanas, S.Zakynthinos, and Ch.Roussos. Patterns of dynamic hyperinflation during exercise and recovery in patients with severe chronic obstructive pulmonary disease. *Thorax* 2005; 60(9): 723-9.
- J22 E.Ntasis, M.Gletsos, N.Mouravliansky, E.Zacharaki, C.Vasios, **S.Golemati**, T.Maniatis, K.S.Nikita. Telematics enabled virtual simulation system for radiation treatment planning. *Comput Biol Med* 2005; 35(9): 765-81.
- J23 J.Stoitsis, I.Valavanis, S.G.Mougiakakou, **S.Golemati**, A.Nikita and K.S.Nikita. Computer-aided diagnosis based on medical image processing and artificial intelligence methods. *Nuclear Instruments and Methods in Physics Section A* 2006; 569(2): 591-595.
- J24 I.Vogiatzis, S.Zakynthinos, O.Georgiadou, **S.Golemati**, A.Pedotti, P.T.Macklem, C.Roussos and A.Aliverti. Oxygen kinetics and debt during recovery from expiratory flow-limited exercise in healthy humans. *Eur J Appl Physiol* 2007; 99(3): 265-274.
- J25 O.Georgiadou, I.Vogiatzis, G.Stratakos, A.Koutsoukou, **S.Golemati**, A.Aliverti, C.Roussos, and S.Zakynthinos. Effects of rehabilitation on chest wall volume regulation during exercise in COPD patients. *Eur Respir J* 2007; 29(2): 284-291.
- J26 I.Vogiatzis, O.Georgiadou, M.Koskolou, D.Athanasopoulos, K.Kostikas, **S.Golemati**, H.Wagner, C.Roussos, P.D.Wagner, and S.Zakynthinos. Effects of hypoxia on diaphragmatic fatigue in highly trained athletes. *J Physiol* 2007; 581(Pt 1): 299-308.
- J27 J.A.Guennette, I.Vogiatzis, S.Zakynthinos, D.Athanasopoulos, M.Koskolou, **S.Golemati**, M.Vasilopoulou, H.E.Wagner, C.Roussos, P.D.Wagner, R.Boushel. Human respiratory muscle blood flow measured by near-infrared spectroscopy and indocyanine green. *J Appl Physiol* 2008; 104(4): 1202-1210.
- J28 I.Vogiatzis, G. Stratakos, D. Athanasopoulos, O. Georgiadou, **S.Golemati**, A. Koutsoukou, I. Weisman, C. Roussos, S. Zakynthinos. Chest wall volume regulation during exercise in COPD patients with GOLD stages II to IV. *Eur Resp J* 2008; 32(1): 42-52.
- J29 P.Y.Ktonas, **S.Golemati**, P.Xanthopoulos, V.Sakkalis, M.D.Ortigueira, H.Tsekou, M.Zervakis, T.Paparrigopoulos, T.Bonakis, N.Economou, P.Theodoropoulos,

S.Papageorgiou, D.Vasilopoulos, C.R.Soldatos. Time-frequency analysis methods to quantify the time-varying microstructure of sleep EEG spindles: possibility for dementia biomarkers? *J Neurosc Meth* 2009; 185(1): 133-142.

J30 **S.Golemati**, E.A.Sanidas, G.D.Dangas. Long-term clinical outcomes after percutaneous coronary intervention for chronic total occlusions. *Curr Cardiol Rep* 2014; 16(2): 450 (6 pages)

J31 H.Tsekou, E.Angelopoulos, T.Paparrigopoulos, **S.Golemati**, C.R.Soldatos, G.N.Papadimitriou, P.Y.Ktonas. Sleep EEG and spindle characteristics after combination treatment with clozapine in drug-resistant schizophrenia: a pilot study. *J Clin Neurophysiol* 2015; 32(2): 159-163.

Chapters in scientific books

Chapters relevant to the field of vascular ultrasound image analysis

B1. **S.Golemati**. Arterial motion estimation from sequences of images. *Advanced Infrastructures for Future Healthcare*, A.Marsh, L.Grandinetti, and T.Kauranne, eds, pp. 536-549, IOS Press, Amsterdam, 2000.

B2. **S.Golemati**, K.S.Nikita. Computer-aided diagnosis of vascular disease. *European Manual of Medicine - Vascular Surgery*, C.D.Liapis, (Ed), Springer-Verlag, 2006.

B3. **S.Golemati**, J.S.Stoitsis, K.S.Nikita. Analysis and quantification of motion within the cardiovascular system – Implications for the mechanical strain of cardiovascular structures. *Handbook of Research on Advanced Techniques in Diagnostic Imaging and Biomedical Applications*, T.P.Exarchos, A.Papadopoulos, D.I.Fotiadis (eds), pp. 34-47, IGI Global, Hershey, USA, 2008.

B4. **S.Golemati**, J.S.Stoitsis, K.S.Nikita. Potential carotid atherosclerosis biomarkers based on ultrasound image analysis. in *Biomedical Image Analysis: Methodologies and Applications*, N. Paragios, J. Duncan, N. Ayache (Eds), Springer 2015.

Other chapters

B5. K.S. Nikita, **S. Golemati**, V. Kouloulis, N.K Uzunoglu, and B.Ch.Golematis. Intraoperative Hyperthermia Combined with Chemotherapy in the Management of Pancreatic Adenocarcinoma: Feasibility Study and First Clinical Results. *Pancreatic Cancer: Current Concepts and Perspectives*, B. Golematis, G. Androulakis, M. Konstandoulakis, N. Nikiteas (Eds), pp. 237-244, FOTOLIO, Athens, 1998 (ISBN: 960-86052-1-0).

B6. G.K.Matsopoulos, **S.Golemati**, and K.S.Nikita. Advanced techniques for medical image processing and visualization to assist diagnosis and treatment. *Honorary Volume for Professor V. C. Golematis*, G.Bonatsos eds, pp. 369-381, Athens, 1999.

B7. **S.Golemati**, S.Gr.Mougiakakou, J.Stoitsis, I.Valavanis, and K.S.Nikita. Clinical decision support systems: Basic principles and applications in diagnosis and therapy. *Clinical Knowledge Management*, R.Bali, (Ed), pp. 251-269, IDEA Group Inc., Hershey, USA, 2005.

B8. **S. Golemati**. Biomedical engineering. *Surgical Pathology*, G. Bonatsos, I. Kaklamanos, V. Golematis, 4th ed, pp. 11-19, P. H. Paschalides: Athens, 2006. [in greek]

B9. E.A.Sanidas, **S.Golemati**, G.Dangas. Interventional Pharmacology: Stent Based Drug Delivery, Local Drug Delivery Management of Patients Before and After PCI. *PanVascular Medicine*, Springer 2015.

B10. A.Gastouniotti, **S.Golemati**, I.Andreadis, V.Kolias, K.S.Nikita. Cardiovascular disease management via electronic health. *The E-Medicine, E-Health, M-Health Telemedicine, and Telehealth Handbook*, H.Eren (ed), CRC Press 2015.

Publications in proceedings of international scientific conferences

Conference proceedings publications relevant to the field of vascular ultrasound image analysis

- C1. C.Grava, **S.Golemati**, P.Asvestas, K.S.Nikita, G.K.Matsopoulos. Estimation of arterial wall motion from ultrasound images. *New Trends in Signal Processing* (5th edition), pp.195-202, Liptovsky Mikulas, Slovakia, 24-26 May 2000.
- C2. **S.Golemati**, A.Sassano, M.J.Lever, A.A.Bharath, S.Dhanjil and A.N.Nicolaides. Arterial distension waveform from B-mode ultrasound: comparison with M-mode ultrasound. *MEDICON – Mediterranean Conference on Biomedical Engineering*, Pula, Croatia, 12-15 June 2001. (co-chaired the session)
- C3. P.Asvestas, **S.Golemati**, G.K.Matsopoulos, and K.S.Nikita. Fractal analysis of B-mode ultrasound images of carotid atherosclerotic plaque. *23rd International Conference of the IEEE-EMBS*, Istanbul, Turkey, 25-28 October 2001.
- C4. **S.Golemati**, A.Sassano, K.S.Nikita, and A.N.Nicolaides. Carotid artery wall and plaque echogenicity on B-mode ultrasound. *2nd European Medical and Biological Engineering Conference, EMBEC*, Vienna, Austria, 04-08 December 2002.
- C5. S.Mougiakakou, **S.Golemati**, I.Gousias, K.S.Nikita, and A.N.Nicolaides. Computer-aided diagnosis of carotid atherosclerosis using Laws' texture features and a hybrid trained neural network. *25th International Conference of the IEEE-EMBS*, Cancun, Mexico, 17-23 September 2003.
- C6. J.Stoitsis, **S.Golemati**, K.S.Nikita, and A.N.Nicolaides. A modular software system to assist interpretation of medical images – Application to vascular ultrasound images. *Proceedings of the IEEE Workshop on Imaging Systems and Techniques*, Stresa-Lago Maggiore, Italy, 14 May 2004.
- C7. J.Stoitsis, **S.Golemati**, K.S.Nikita, and A.N.Nicolaides. Computer-aided diagnosis of carotid atherosclerosis from B-mode ultrasound. *Proceedings of the 4th European Symposium on Biomedical Engineering*, 25-27 June 2004, Patras, Greece.
- C8. G.L.Tsirogiannis, D.Frossyniotis, J.Stoitsis, **S.Golemati**, A.Stafylopatis, and K.S.Nikita. Classification of medical data with a multi-level combination scheme. *Proceedings of the Annual International Joint Conference on Neural Networks, IJCNN* 2004, 25-29 July 2004, Budapest, Hungary.
- C9. J.Stoitsis, **S.Golemati**, K.S.Nikita, and A.N.Nicolaides. Characterization of carotid atherosclerosis based on motion and texture features and clustering using fuzzy c-means. *Conf Proc IEEE Eng Med Biol Soc* 2004; 2: 1407-1410.
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Other conference proceedings publications

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- C44. **S. Golemati**, V. Zourou, K. S. Nikita. Comparison of entropy measures for estimating severity of obstructive sleep apnea from overnight pulse oximetry data. *IEEE ITAB 2010, The International Special Topic Conference on Information Technology in Biomedicine*, Corfu, Greece, 2-5 November 2010.

Abstracts in international scientific conferences

Abstracts relevant to the field of vascular ultrasound image analysis

- A1 D.Maintas, **S.Golemati**, J.Damien, P.Chirossel, G.Bergeles, and R.Itti. Approche par de méthodes de mécanique des fluides du débit coronaire: application d'un modèle théorique sur le réseau coronaire réel et confrontation avec les méthodes isotropiques – Travail préliminaire. *XXXI^e Colloque de Médecine Nucléaire de Langue Française*, Fort-de-

France, 20-22 November 1993 Médecine Nucléaire – Imagerie fonctionnelle et Métabolique 1993 (17), 7-8, 337.

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- A8 **S.Golemati**, S.Lehareas, N.N.Tsiaparas, A.Chatziioannou, D.N.Perrea, K.S.Nikita. Using multiresolution texture analysis of B-mode ultrasound images to identify vulnerable asymptomatic plaque. *RSNA*, Chicago, USA, 30 November - 05 December 2014.
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- A10 I.Vogiatzis, **S.Golemati**, O.Georgiadou, E.Kosmas, E.Kastanakis, A.Aliverti, S.Nanas, and C.Roussos. Chest wall volumes at total lung capacity during incremental exercise and recovery in patients with COPD. *COPD4 An International Interdisciplinary meeting on Chronic Obstructive Pulmonary Disease*, Birmingham, UK, 9-11 June 2004.
- A11 I.Vogiatzis, **S.Golemati**, O.Georgiadou, E.Kosmas, E.Kastanakis, A.Aliverti, A.LoMauro, S.Nanas, and Ch.Roussos. Chest wall volumes at TLC during incremental exercise and recovery in patients with severe COPD. *Eur Respir J* 2004;24(Suppl 48):215S-216S.
- A12 I.Vogiatzis, A.Aliverti, **S.Golemati**, O.Georgiadou, A.LoMauro, E.Kosmas, E.Kastanakis, D.Sakelariou, and Ch.Roussos. Chest wall volumes at TLC during incremental exercise in healthy men and women. *Eur Respir J* 2004;24(Suppl 48):325S-326S.
- A13 I.Vogiatzis, O.Georgiadou, **S.Golemati**, P.T.Macklem, C.Roussos, and A.Aliverti. Oxygen kinetics during recovery from expiratory flow-limited (EFL) exercise in healthy men. *Proceedings of the American Thoracic Society* 2005;2: A304.
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- A17 P.Y.Ktonas, **S.Golemati**, H.Tsekou, N.T.Economou, P.Theodoropoulos, P.Xanthopoulos, T.Paparrigopoulos, S.Papageorgiou. Dementia biomarkers related to sleep spindle morphology. *J Sleep Res* 2008; 17: 239.
- A18 H.G.Tsekou, P.Ktonas, E.Angelopoulos, **S.Golemati**, T.Paparrigopoulos, C.Soldatos. Sleep spindle characteristics after augmentation treatment with clozapine in drug-resistant schizophrenia. *J Sleep Res* 2008; 17 Suppl 1: 259.

2.4 TEACHING ACTIVITIES

Undergraduate courses

- *Biomedical Technology*, 2nd semester, Dept of Nursing, National Kapodistrian University of Athens, acad. year: 00-01.
- *Optimal Control*, 7th semester, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. year: 02-03.
- *Principles of Biomedical Systems*, 9th semester, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. year: 02-03.
- *Special Topics on Automatic Control*, 8th semester, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. years: 02-03, 03-04.
- *Neural Networks and Applications*, 7th semester, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. year: 04-05.
- *Theory and Applications of Automatic Control*, 5th semester, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. year: 04-05.
- *Linear Systems*, 4th semester, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. year: 04-05.
- *Biophysics – Biomedical Technology*, 1st semester, Dept of Nursing, University of Peloponnese, acad. years: 05-06, 07-08.
- *Digital Biosignal Processing*, 5th semester, Dept of Computer Science and Biomedical Informatics, University of Central Greece, acad. year: 07-08.
- *Biomedical Image Analysis*, 8th semester, Dept of Computer Science and Biomedical Informatics, University of Central Greece, acad. year: 07-08.
- Seminars entitled “The role of information technology in the monitoring of patients in the intensive care unit”, in the context of the course *Intensive Care*, 10th semester, Medical School, National Kapodistrian University of Athens, acad. year: 09-10.

Postgraduate courses

- Lectures in the context of the course *Health informatics*, 1st semester, Postgraduate program ‘Intensive Care Units and Emergency Nursing’, Medical School, National Kapodistrian University of Athens, acad. years: 08-09, 09-10.
- Lectures in the context of the course *Informatics*, 3rd semester, Postgraduate program ‘Intensive Care Units and Cardiological Emergency Nursing’, Medical School, National Kapodistrian University of Athens, acad. years: 11-12-today.
- Online lectures in the context of the course *Medical Image Analysis in Ophthalmology*, 2nd semester, Postgraduate program ‘Ophthalmological Imaging’, Medical School, Democritus University of Thrace, acad. years: 13-14, 15-16.

Supervision of Ph.D. and diploma theses

- Member of the advisory committee of a PhD thesis, Medical School, National Kapodistrian University of Athens, 2011-today.
- Member of the advisory/examination committee of three PhD theses, Dept of Electrical and Computer Engineering, National Technical University of Athens, 2009-today.

- Co-supervision (with Prof. K.S.Nikita) of 11 diploma theses, Dept of Electrical and Computer Engineering, National Technical University of Athens, acad. years: 01-02, 02-03, 03-04, 04-05, 05-06, 06-07, 07-08, 08-09, 09-10.
- Co-supervision (with Prof. M.Christodoulou) of 2 diploma theses and (with Prof. M.Zervakis) of 2 diploma theses, Dept of Electrical and Computer Engineering, Technical University of Crete, acad. year: 02-03.
- Member of the examination committee of 1 postgraduate diploma thesis (supervisor: Prof. L.Liaropoulos), Dept of Nursing, National Kapodistrian University of Athens, acad. year: 01-02.