

KARALI EVANGELIA

P h D
B I O M E D I C A L
E N G I N E E R I N G
M S c
A U T O M A T I C
C O N T R O L

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Pefki, 15121, Greece
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SKILLS

- Medical data analysis and processing
- Optimization techniques in medical data retrieval
- Medical systems design and development
- Managing skills gained through supervision of student's diploma thesis and semester projects
- Extensive teaching experience in electronics, telecommunications and signal processing
- Object-oriented design skills gained through visual C++ software development during my studies
- Strong analytical and problem solving skills gained through my PhD years of work.
- Familiarity with Unified Modeling Language (UML) and Business Process Model and Notation (BPMN) gained through development of flowcharts of

SUMMARY

Biomedical Engineer with academic knowledge in hardware and software design, programming and development. Object-oriented way of thinking, analytical and problem-solving skills.

EMPLOYMENT

RESEARCHER at Thalys project, Image Reconstruction, Image Segmentation
National Technical University of Athens, School of Applied Mathematics and Physical Sciences ▪ 2012 (10 months)

- + Description: Development of a novel image reconstruction algorithm
- + Role: Researcher
- + Deliverable: Image reconstruction software, one publication to a journal
- + Duration: (Design, coding, testing, implementation) 10 months
- + Usage: medical diagnosis, a new algorithm for reconstruct positron emission tomography data

RESEARCHER at Leucippus project, Study of deformable models, National Technical University of Athens, School of Applied Mathematics and Physical Sciences ▪ 2006

- + Description: Study of deformable models
- + Role: Researcher
- + Deliverable: a survey of deformable models application
- + Duration: (research of bibliography, writing) 1 year
- + Usage: medical diagnosis, defining retinal pathologies, like glaucoma

RESEARCHER at Reconstruction Processing and analysis of multimodal medical images project,
Technical University of Madrid, Spain 2005

- + Description: Development of attenuation correction methods for Positron Emission Tomography Data
- + Role: Researcher
- + Deliverable: a survey of attenuation correction methods, matlab code
- + Duration: (research of bibliography, coding, testing, implementation) 6 months
- + Usage: medical diagnosis, attenuation corrected PET images that help in a more accurate diagnosis

RESEARCHER at Monte-Carlo simulation of new generator, high resolution, small animal PET systems (hires-PET) project,
National Technical University of Athens (Greece), Technical University of Madrid (Spain) 2005

- + Description: Simulation of hires-PET using GATE
- + Role: Researcher
- + Deliverable: simulation code
- + Duration: (research of bibliography, coding, testing, implementation) 1 year

RESEARCHER at BIOATHLETICS

algorithms and workflows during my research and teaching

SOFTWARE

Office 365
Adobe Photoshop
Corel Paint Shop 9
Rhinoceros (CAD)

PROGRAMMING LANGUAGES AND ENVIRONMENTS

c/c++
Visual C++
Matlab/Simulink
IDL
Octave
Multisim
Visual Basic
Assembly
Fortran
Pascal
Knowledge of XML

DATA BASES

MS Access (form, report design, SQL queries)

KNOWLEDGE OF OPERATING SYSTEMS

Windows XP, VISTA, 7, 8, 10,11
LINUX Fedora, Ubuntu
MAC OS

LANGUAGES

Institute of Communication and Computer Systems, National Technical University of Athens 2003-2004

- + Description: Image registration software development and implementation
- + Role: Researcher
- + Deliverable: Image registration software, one publication to a journal
- + Duration: (Design, coding, testing, implementation) 6 months
- + Usage: medical diagnosis, defining retinal pathologies, like glaucoma

RESEARCHER at ATLAS

Institute of Accelerating Systems and Applications, University of Athens 2001

- + Description: Development and construction of a prototype system capable of testing optoelectronic properties of ATLAS detectors
- + Role: Researcher
- + Deliverable: one publication to a journal
- + Duration: (Design, testing, implementation) 6 months
- + Usage: ATLAS, CERN. I assembled and tested a great number of detectors which formed the ATLAS detector at CERN

ASSISTANT PROFESSOR at University of Piraeus 2023

- + Teaching subject: Electronic Computers II

LECTURER at Athens University of Economics and Business, Athens 2022

- + Teaching subject: Applied Informatics

LECTURER at University of West Attica, Athens 2018-today

- + Teaching subject: Electronic Systems (laboratory)
- + Teaching subject: Biophysics (laboratory)
- + Teaching subject: Algorithms and Complexity (laboratory)
- + Teaching subject: Data Acquisition Systems (laboratory)
- + Teaching subject: Electronic Circuits (laboratory)
- + Physics I, II (laboratory)

LECTURER at School of Pedagogical and Technological Education Athens 2019-today

- + Teaching subject: Electronics I, II, III (laboratory)
- + Teaching subject: Digital Signal Processing and Analysis (2019-2020) (laboratory)
- + Teaching subject: Broadcasting Systems (laboratory)
- + Teaching subject: Component Technology (laboratory)

LECTURER at Technological Education Institute (TEI) of Solid Greece Chalkida, 2018-2019

- + Teaching subject: Electronics I, II (laboratory)

LECTURER at Technological Education Institute (TEI) of Solid Greece Lamia, 2017-2018

- + Teaching subject: Signals and Systems (laboratory)
- + Teaching subject: Logic Design I (laboratory)
- + Teaching subject: Programming I (laboratory)

Greek (native speaker)
English (Proficiency level)
German (Very Good)
Spanish (Fundamental)

ASSISTANT PROFESSOR at University of Patras
Patras, 2015-2017
+ Teaching subject: Logical Design II (laboratory)

LECTURER at University of Thessaly
Lamia, 2013-2014, 2014-2015
+ Teaching subject: Signals and Systems (theory)
+ Teaching subject: Telemedicine (theory)

TEACHER at Hellenic Navy School (SMYN)
Athens 2015-2022
+ Teaching subject: Digital Electronics I (theory)
+ Teaching subject: Digital Electronics II (theory) (2021-today)
+ Teaching subject: Digital Electronics II (laboratory) (2022)

LECTURER at Technological Education Institute (TEI) of ATHENS
Athens 2014-2017
+ Teaching subject: Physics, Optics (laboratory)

LECTURER at Technological Education Institute (TEI) of Piraeus
Athens 2010-Present
+ Teaching subject: Physics, Electrical Circuits I & II, Electrical
Systems (laboratory)

LECTURER/ASSISTANT PROFESSOR at Technological
Education Institute (TEI) of KALAMATAS
Sparta, 2007-2010
+ Teaching subject: Analog Electronics (theory and laboratory),
Digital Electronics (theory and laboratory), Telecommunication
Systems I & II (theory and Laboratory), Antennas (theory), Satellite
Communications (theory), Wireless and Personal Communications
(laboratory)

LECTURER at Technological Education Institute (TEI) of IONIAN
ISLAND Cephalonia, 2004-2008
+ Teaching subject: Physics (theory and laboratory), Digital Sound
Processing (theory), Digital Voice Processing (theory), Information
Technology (Internet)

EDUCATION

DEGREE IN PHYSICS ▪ 2000
University of Athens
Grade: 7.6

MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING ▪
2003
University of Patras and National Technical University of Athens
Direction: Biomedical Information Technology and Electronics
Grade: 9.02

MASTER OF SCIENCE IN AUTOMATIC CONTROL SYSTEMS ▪ 2013

National Technical University of Athens

Direction: Automatic Control Systems and Robotics

Grade: 8.9

PHD IN BIOMEDICAL ENGINEERING ▪ 2010

University of Patras and National Technical University of Athens

Grade: 9.5

PUBLICATIONS

Journals:

1. E. Karali, G. Loudos, N. Sakelios, K. Nikita, N. Giokaris. "Scatter Correction in high resolution detectors based on PSPMTs and scintillator arrays: An evaluation Study", IEEE proceedings in Image Processing, vol.3, no., pp.III-589-92, 2005
2. E. Karali, G. Loudos, N. Sakelios, K. Nikita, N. Giokaris. "Scatter Correction in small animals SPECT imaging", WSEAS TRANSACTIONS on BIOLOGY and BIOMEDICINE, Issue 1, Volume 3, pp:17-19, January 2006
3. E. Karali, P.Asvestas, G.Matsopoulos, V. Karali and K. Nikita "Automatic Retinal Image Registration", WSEAS TRANSACTIONS on BIOLOGY and BIOMEDICINE, Issue 1, Volume 3, pp:13-15, January 2006.
4. P. Adragna, A. Antonaki, I. Boudagov, V. Cavasinni, D. Constanzo, T. Del Prete, A. Dotti, D. Fassouliotis, V. Giakoumopoulou, N. Giokaris, C. Guicheney, E. Karali, et al, «A PMT-Block Test Bench», Nucl. Instrum. Meth. A564 (2006) pp:597-607
5. N. Sakelios, E. Karali, D. Lazaro, G. Loudos, K. Nikita "Monte- Carlo Simulation for Scatter Correction Compensation Studies in SPECT Imaging using GATE", Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Volume 569, Issue 2, 20 p 404-408, December 2006,
6. E. Karali, G. K. Loudos, N. Sakelios, K. S. Nikita, N. Giokaris, "A Comparative Evaluation of Scatter Correction Techniques in High Resolution Detectors Based on PSPMTs and Scintillator Arrays", IEEE Transactions on Instrumentation and Measurement, Vol 55, No 6, pp: 1913-1917, December 2006
7. Karali, E.; Pavlopoulos, S.; Koutsouris, D., "Assessment of iterative image reconstruction techniques for small-animal PET imaging applications," IEEE proceedings in Bioinformatics and BioEngineering, vol., no., pp.1-6, 8-10 Oct. 2008
8. E. Karali, S. Pavlopoulos, S. Lambropoulou, D. Koutsouris, " ISWLS: NOVEL ALGORITHM FOR IMAGE RECONSTRUCTION IN PET " IEEE Transactions on Information Technology in Biomedicine, Vol 15, Issue 13, pp: 381-6, 2011
9. E. Karali, D. Koutsouris, "MRP approaches to PET image reconstruction", IEEE proceedings in Biomedical Engineering and Informatics (BMEI), vol.1, no., pp.399-403, 15-17 Oct. 2011
10. E. Karali, S. Lambropoulou, D. Koutsouris, "Elastic models: a comparative study applied to retinal images", Technology and Health

Care, Vol 19, pp:1-13, IOS Press, 2011

11. E. Karali, D. Koutsouris, "Towards novel regularization approaches to PET image reconstruction", Journal of Biosciences and Medicines, 2013, 1, 6-9, JBM
12. Karalis, "A Feasibility Study of a Mesophilic Anaerobic Biological Process Unit Installation in Attica, Greece", International Journal of Engineering Research And Management (IJERM) ISSN: 2349- 2058, Volume-03, Issue-10, October 2016
13. Karalis, "Towards thermophilic anaerobic digestion application in Attica, Greece: a feasibility study", International Journal of Research in Engineering and Science (IJRES) ISSN (Online): 2320-9364, ISSN (Print): 2320-9356 www.ijres.org Volume 9 Issue 4 || 2021 || PP. 50-57

Books:

- E. Karali, P. Asvestas, K.S. Nikita, G.K. Matsopoulos, "Comparison of Different Global and Local Automatic Registration Schemes: An Application to Retinal Images", Medical Image Computing and Computer-Assisted Intervention–MICCAI 2004 (7th International Conference, Saint-Malo, France, September 26-29, 2004. Proceedings, Part I) Lecture Notes in Computer Science Volume 3216, 2004, pp:813-820, Springer
- Chapter 33: NTUA-ISWLS-Novels Algorithm for Image Reconstruction in PET, pages 2461, Advances in Information Technology Research and Application, 2012 Edition, Atalanta, Georgia ISBN: 978-1-4649-9051-9
- Karali E. (2017) Chapter 23: Novel Approaches to Medical Information Processing and Analysis. In: Lambropoulou S., Theodorou D., Stefanias P., Kauffman L. (eds) Algebraic Modeling of Topological and Computational Structures and Applications. AIModTopCom 2017. Springer Proceedings in Mathematics & Statistics, vol 219. Springer, Cham
- Karali, E.K. (2023). Small Animal PET Imaging: Towards an Imaging Analysis Approach for System Average Performance Conclusion. In: Wen, S., Yang, C. (eds) Biomedical and Computational Biology. BECB 2022. Lecture Notes in Computer Science(), vol 13637. Springer, Cham.
- E. Karali (2024). Small animal imaging: Iterative algorithms combined with regularization schemes, an application to a dual-head small animal PET. Medical Imaging and Computer-Aided Diagnosis, Lecture Notes in Electrical Engineering 810

Conferences (with referees): 19 published

Lectures Notes authored: 7

Diploma thesis supervised: 10 fulfilled

Reviewer:

- CMSA 2021 : 2021 3rd International Conference on Computer

Modeling, Simulation and Algorithm (CMSA2021), July 4-5 2021, Shanghai, China

- 2021 International Conference on Computer Modeling, Simulation and Big Data (CMSBD2021), November 14-15, 2021 in Shenzhen, China
- The 4th International Conference on BioMedical Engineering and Informatics (BME11), 15-17 October 2011, Shanghai, China