CONSTANTINOS LOUKAS

Associate Professor

Medical Physics Laboratory, Medical School
National and Kapodistrian University of Athens

Short Curriculum Vitae

November 2022

Research Interests

- Artificial Intelligence in Surgery
- Biomedical Image and Signal Analysis
- Virtual and Augmented Reality Systems in Medicine
- Medical Simulation Training

Education

2002	PhD in Medical Physics, Department of Medical Physics & Bioengineering, University College London, London, UK.
1998	MSc in Medical Physics, Department of Physics, University of Surrey, UK.
1996	BSc (Hons) in Physics, Department of Physics, University of Athens.

Employment

2022-present	Associate Professor, Medical Physics Laboratory, Medical School, National and Kapodistrian University of Athens.
2013-2022	Assistant Professor, Medical Physics Laboratory, Medical School, National and Kapodistrian University of Athens.
2010-2013	Lecturer, Medical Physics Laboratory, Medical School, National and Kapodistrian University of Athens.
2008-2009	Project Manager (Medical Informatics), ATKO-Soft, Athens.
2007	Project Manager (Medical Informatics), Datamed, Athens.
2005-2006	Senior Research Scientist, FORTH-Photonics (Diagnostic Imaging Technologies), Athens.
2002-2004	Postdoctoral Scientist, GlaxoSmithKline (GSK), Addenbrookes Centre for Clinical Investigation, Cambridge, UK. Sobell Department of Motor Neuroscience & Movement Disorders, Institute of Neurology, London, UK.
1998-2001	Doctoral (PhD) Researcher, Gray Cancer Institute, Mount Vernon Hospital, Northwood, UK.

Research visits & Postgraduate training

9/2009	2nd Annual Postgraduate course, American College of Surgeons-Accredited Education Institutes, Seattle, USA.
4-5/2003	Institute of Psychiatry, Cognition Schizophrenia Imaging Lab, King's College London, UK.
6/2000	EPSRC Computer Vision Summer School, University of Surrey, UK.
1/2001	CCLRC Rutherford Appleton Laboratory, Engineering and Instrumentation, Central Microstructure Facility, Chilton, UK.
6-9/1998	Royal Free Hospital, Department of Medical Physics, London, UK.
4-5/1996	Erasmus course on 'Ionizing radiations in Industry and Medicine', Vienna, Austria.

Teaching (current, Graduate/Postgraduate)

- Medical Physics, Physics of the Human Body, Medical Informatics, Medical Image Analysis, Computer applications in ICU, Medical Simulation, Artificial Intelligence in Surgery.

Scientific Activities

- Accredited Medical Physicist (non-ionizing radiations).
- Member of: IEEE, INSTICC, IPEM, Hellenic MPA, Technologies and Simulation Committee (Consortium of American College of Surgeons-Accredited Education Institutes).
- Member of the Editorial Board: Int J of Advanced Robotics and Automation, Applied Sciences.
- Reviewer in >30 journals (Medical Image Analysis, IEEE Trans BME, IEEE Trans HMS, IEEE J BHI, IJCARS, IJMRCAS, CAS, CMPB, CBM, PMB, MBEC, etc.).
- Reviewer for R&D grant proposals (e.g. GSRT, NSRF, International Research Funding Organizations, University funds, etc.).
- Invited speaker in scientific conferences: >20.

Funded R&D Projects

- Research Coordinator, Project Manager: 9 projects.
- Member of the research team: 10 projects.

Indicative projects

- 'INCISIVE-Improving cancer diagnosis and prediction with AI and big data'. EU Horizon 2020 research and innovation programme, (Member, 10/2020-present).
- 'Development and evaluation of a virtual reality simulation platform based on a novel motion tracking device for skills assessment in laparoscopic surgery'. Source: King Fahad Medical City, Riyadh, Saudi Arabia, (Coordinator, 2015-2016).
- 'Development and dissemination of digital educational material for the bilateral communication of healthcare professional using novel simulation systems and techniques'. Source: National Strategic Reference Framework 2007-2013, (Coordinator, 2011-2015).

- 'Prospective evaluations and end-user oriented tools to guide the brachytherapy community through a smooth transition to model based, individualized treatment planning dosimetry'. Source: Research Funding Program: Aristeia, (Member, 2012-2015).
- 'Filippos: Development, and installation of HIS, LIS, RIS and PACS for the multilateral communication of seven military hospitals in Greece'. Source: 3rd Community Support Framework 2000-2006, (Project Manager, 2007).

Awards & Studentships

- 6 best paper awards in scientific conferences (5 first/co-author & 1 single author).
- 3 years PhD studentship from the Cancer Research UK (1998).

Publications

- Papers in journals with impact factor: 46 (1st Author: 29).
- Total impact factor: >160.
- Papers in conf. proceedings and journals without impact factor: >20.
- Abstracts in journals and conf. proceedings: >20.
- Chapters in books: 4.
- h-index (Scopus/Scholar): 17/21 (1st Author in the h-index: 12/14).
- Citations (Scopus/Scholar): 864/1340.

Selected papers

- **C. Loukas**, *et al*., 'Multiple instance convolutional neural network for gallbladder assessment from laparoscopic images', Int J Med Robot Comput Assist Surg, 2022.
- **C. Loukas**, *et al*., 'Patch-based classification of gallbladder wall vascularity from laparoscopic images using deep learning', Int J Comput Assist Rad Surg, 16(1), 103-113, 2021.
- **C. Loukas**, *et al.*, 'Multi-instance multi-label learning for surgical image annotation', Int J Med Robot Comput Assist Surg, 16(2):e2058 (1-12), 2020.
- **C. Loukas**, *et al.*, 'Keyframe extraction from laparoscopic videos based on visual saliency detection', Comp Meth Prog Biomed, 165, 13-23, 2018.
- **C. Loukas**, 'Video content analysis of surgical procedures', Surg Endosc, 32(2): 553-568, 2018.
- V. Lahanas, **C. Loukas**, *et al.*, 'Virtual reality-based assessment of basic laparoscopic skills using the Leap Motion controller', Surg Endosc, 31(12):5012-5023, 2017.
- **C. Loukas**, *et al.*, 'Shot boundary detection in endoscopic surgery videos using a variational Bayesian framework ', Int J Comput Assist Rad Surg 11(11):1937-1949, 2016.
- V. Lahanas, **C. Loukas**, *et al.*, 'A novel augmented reality simulator for skills assessment in minimal invasive surgery', Surg Endosc, 29(8):2224-34, 2015.
- **C. Loukas**, *et al.*, 'Smoke detection in endoscopic surgery videos: A first step towards retrieval of semantic events', Int J Med Robot Comput Assist Surg, 11(1), 80-94, 2015.