CURRICULUM VITAE

Marios Myronakis, AAPM Member

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UNDERGRADUATE STUDIES

2002: Bachelor's degree in Physics
Aristotle University of Thessaloniki, Thessaloniki, Greece

POSTGRADUATE STUDIES

2013: Ph.D. "Computational Design of Breast-Specific Imaging Systems Based on CdZnTe Pixelated Detectors"
Institute of Cancer Research, Royal Marsden NHS Foundation Trust, University of London, London, UK

2004: M.Sc. in Medical Physics (with distinction)
University of Surrey, Guildford, UK

PROFESSIONAL

- License to practice as a Hospital Physicist (excluding ionizing radiation) (24/12/2007)

- License to practice as a Medical Physicist (13/02/2020)

RESEARCH/ACADEMIC EXPERIENCE

2024-Present: Assistant Professor, University of Thessaly, Larissa, Greece

2019-Present: Research and Development Consultant in Computational Methods for Medical Physics and Detector Design
Berbeco Lab, Division of Medical Physics and Biophysics, Brigham and Women's Hospital, Dana Farber Cancer Institute, Harvard Medical School, Boston, MA, USA

2015-2019: Postdoctoral Researcher
Brigham and Women's Hospital and Dana Farber Cancer Institute, Harvard Medical School

INNOVATIVE APPLICATIONS

- Feasibility study of MVCBCT imaging system for ViewRay MRIdian MRLINAC. The study aims to create electronic density distributions using MVCBCT to accelerate the workflow during adaptive radiotherapy in MRLINAC (AAPM Annual Meeting 2023 Link1).

- Development of an AI computational tool for calculating organ doses and associated cancer risks after a chest CT scan. The innovation is based on a) the requirement of a small number of patients for AI algorithm training with deep learning, and b) the immediate estimation of organ doses giving a representative and personalized dose value for each patient, avoiding intermediate steps like image production and segmentation which introduce errors and increase uncertainty (Med. Phys. 2023 1-9 DOI: 10.1002/mp.16356).

- Development of an application for accelerating MV- and kV-CBCT imaging simulations in radiotherapy using the Monte Carlo method. The application uses predefined optical spread function matrices for specific detectors simultaneously with the Monte Carlo method, achieving up to 150 times acceleration with CPU (Phys Med Biol. 2020 65(13): 135004) and up to 2300 times with GPU (Phys. Med. Biol. 2020 65: 235042) compared to conventional Monte Carlo methods.

- Development of an application integrating Finite Element Analysis (FEA) with Monte Carlo simulation for more accurate simulation of Cadmium Zinc Telluride (CZT) semiconductor detectors. This is the first application combining the two methods in three dimensions, allowing simultaneous estimation of photon

detection and the resulting signal under an electric field (Med. Phys. 2011 38: 455-467).

RESEARCH INTERESTS

- Development of detector designs for imaging with kV and MV X-ray energy spectra.
- Dose estimation from imaging procedures in diagnosis and radiotherapy.
- Use and optimization of computational methods in Medical Physics for dose estimation, detector design, and imaging simulation.
- Combining different computational methods (e.g., Monte Carlo and Finite Element Method) for imaging system simulation.
- Application of artificial intelligence (Machine Learning and Deep Learning Networks) in predicting dose estimation from imaging procedures.

AWARDS/SCHOLARSHIPS

- **2017**: AAPM Annual Meeting 2017 Best in Physics: "Optimizing a Layered Detector Design for Megavoltage Spectral Imaging" Denver, Colorado.
- **2013**: Scholarship from EPSRC Platform Grant & CRUK for one year postdoctoral studies at the Institute of Cancer Research.
- **2009**: Scholarship for four-year Ph.D. at the Institute of Cancer Research (ICR).
- **2004**: Completion of postgraduate studies in Medical Physics with distinction, University of Surrey, Guildford, UK.

PUBLICATIONS

- More than 35 publications in peer-reviewed journals (Scopus)
- Selected recent publications:
    - Rapid estimation of patient-specific organ doses using a deep learning network M Myronakis J Stratakis J Damilakis Med. Phys. 1-9 2023 (early view) https://doi.org/10.1002/mp.16356
    - Low-dose megavoltage cone-beam computed tomography using a novel multi-layer imager (MLI) M Myronakis P Huber M Lehmann R Fueglistaller

M Jacobson Y-H Hu P Baturin A Wang M Shi T Harris D Morf R Berbeco Med. Phys. 47(4) 2020

- A novel method for fast image simulation of flat panel detectors M Shi M Myronakis Y-H Hu M Jacobson M Lehmann R Fueglistaller P Huber P Baturin A Wang D Ferguson T Harris D Morf R Berbeco Phys. Med. Biol. 64(9) 2019

- A novel multilayer MV imager computational model for component optimization M Myronakis J Star-Lack P Baturin J Rottmann D Morf A Wang Y-H Hu D Shedlock RI Berbeco Med. Phys. 44(8) 2017

- Improvements in beam's eye view fiducial tracking using a novel multilayer imager TC Harris J Seco D Ferguson M Jacobson M Myronakis I Valencia Lozano M Lehmann P Huber R Fueglistaller D Morf HJ Mamon JD Mancias NE Martin RI Berbeco Phys. Med. Biol. 66(15) 2021

SCIENTIFIC CONFERENCES

- Over 30 scientific presentations at international conferences.
- Talks and Posters at eight annual conferences of the American Association of Physicists in Medicine (AAPM annual Meetings 2015-2022).
  - ePoster AAPM Annual Meeting 2023 (Link1 Link2)
  - Talk AAPM Annual Meeting 2022 (Link 1 Link 2)
  - ePoster AAPM Annual Meeting 2021 (Link 1 Link 2)
  - ePoster AAPM Annual Meeting 2020 (Link 1 Link 2)
  - Talks AAPM Annual Meeting 2019 (Link 1 Link 2 Link 3)
  - Talk AAPM Annual Meeting 2018 (Link 1 Link 2)
  - Talks AAPM Annual Meeting 2017 (Link 1 - Best in Physics- Link 2 Link 3)
  - Talks AAPM Annual Meeting 2016 (Link 1 Link 2 Link 3)
  - Posters AAPM Annual Meeting 2015 (Link 1 Link 2 Link 3)
  - Talk RSNA 2021 Chicago Il USA: SPR-PH-24 Tube Current Modulation Reconstruction From Chest CT Images Using Deep-learning Regression Algorithms
  - Talk ECMP 2020 Turin Italy: Machine Learning Estimation of Personalized Organ-dose Absorption from CT Examinations (Link to Program pdf)
  - ePoster ASTRO 59th Annual Meeting 2016 (Link 1)

- Talks and Posters at eight IEEE NSS/MIC conferences (2009-2013) (IEEE Explore Link)