Curriculum Vitae

Gueorgui (George) Gueorguiev, PhD

Personal Information

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Citizenship: dual, American and Bulgarian

Work Experience

07/2021-Current **Owner/Instructor** – Georg Yoga Studio, Sofia, Bulgaria

- led individual/small group Hatha Yoga and Yin Yoga classes

09/2017-07/2021 **Medical Physicist** - Ackerman Cancer Center, Jacksonville, USA

- comprehensive quality assurance/calibration measurements on Elekta Synergy and Versa linear accelerators, on MEVION proton therapy system, and on Elekta Nucletron
- patient chart checks and daily use of record and verify system Elekta MOSAIQ
- treatment planning using RaySearch RayStation, BrainLab iPlan and Elekta Oncentra treatment planning systems
- comprehensive involvement in Electron, HDR Brachytherapy, I-131 and SRS/SBRT/Proton treatments
- performed quality assurance/calibration measurements on Phillips PET-CT and Swissray MRI scanners
- performed acceptance, testing and commissioning of Elekta Versa linear accelerator
- developed patient specific and machine QA protocols for MEVION proton system and Elekta Versa accelerator
- co-managed a team of 6 Medical Physics Assistants
- Python/Matlab/Tableau programming projects implemented in the clinical workflow:
    - patient specific proton or photon QA preparation script
    - SRS/SBRT treatment plan check script
    - Proton treatment plan check script
    - HDR Brachytherapy plan verification tool
    - 2D gamma analysis tool

01/2007-09/2017 **Senior Medical Physics Assistant** - Massachusetts General Hospital, Boston, USA

- comprehensive quality assurance/calibration measurements on Varian and Elekta linear accelerators, and on IBA pencil beam scanning/double scattering proton therapy systems. Equipment used: IBA Blue Phantom with OmniPro Accept, IBA MatriXX detector, IBA Zebra with OmniPro Incline, IBA Lynx, SunNuclear ArcCheck and StereoPHAN. IBA COMPASS and MyQA systems
- daily use of radiation oncology record and verify system Elekta MOSAIQ
- performed acceptance, validation and commissioning of a 3D quality assurance protocol for IMRT, VMAT, and SBRT
- implemented in the Radiation oncology department a 3D DVH analysis as part of the patient treatment plan 3D quality assurance
- performed acceptance, testing, commissioning and shielding of 9 linear accelerators (Elekta Infinity, Synergy and Agility; Varian 2100 and True Beam)
- performed acceptance, testing and commissioning of RaySearch RayStation treatment planning system
- treatment planning using Elekta XIO, Elekta pXIO, Elekta Oncentra, RaySearch RayStation and ASTROID treatment planning systems
- performed High Dose Radiation Brachytherapy (HDR) treatment procedures
- performed MRI and CT scanner QA and calibration
- Intra Operative Radiation Therapy (IORT) treatment planning, patient care and treatment procedure
- co-advised two Master and One Doctoral students to successful degree completion

09/2005-01/2007 **Teaching assistant** - University of Massachusetts-Lowell, USA

- lectured and conducted lab sessions for 4 courses: Digital Signal Processing; Bioinstrumentation; Medical Imaging; Signal Processing

Programming Languages/Tools

- Python; Excel VBA; GEANT4 Monte Carlo simulations; MATLAB; Tableau

Education

08/2021-Current **Udemy Courses:**

- The Python Mega Course: Build 10 Real-World Programs
- Python-Introduction to Data Science and Machine learning A-Z
- Learn Advanced Excel VBA for Automation
- Advanced Microsoft Excel Formulas & Functions
- MATLAB Master Class: Go from Beginner to Expert in MATLAB
- Complete Tableau Training for Absolute Beginners
- Tableau For Data Science with REAL-Life Data Science Exercises

2008-2017 **Ph.D.** University of Massachusetts, USA/Massachusetts General Hospital, USA; Biomedical Engineering and Biotechnology program - ***therapeutical medical physics program track*** (Commission on Accreditation of Medical Physics Education Programs - CAMPEP approved program)

2005-2008 **M.S.** University of Massachusetts, USA; **Biomedical Engineering and Biotechnology program** (Commission on Accreditation of Medical Physics Education Programs - CAMPEP approved program)

1998-2003 Sofia University "St. Kliment Ohridski", Bulgaria; **Medical Physics module**

1996-2002 **M.S.** Sofia University "St. Kliment Ohridski", Bulgaria; **Chemistry and Physics program**

Professional affiliations

- ABR Therapeutic Medical Physics – passed parts I and II
- Member - American Association of Physicists in Medicine (AAPM)
- Member - Bulgarian Society of Biomedical Physics and Engineering (BSBPE)
- Member - Radiological Society of North America (RSNA)

Doctoral research projects

- Successfully implemented 3D patient specific quality assurance protocol for IMRT, SBRT and VMAT.
- Determined the effect of CT gold fiducial artifacts during proton lung treatment.
- Computing proton dose to irregularly moving targets.
- Clinically evaluated novel transmission detector (IBA Dolphin) for pre-treatment, intra-fractional and post-treatment patient treatment plan 3D quality assurance for IMRT, SBRT, and VMAT

Special Interests

- Ashtanga Yoga, Hatha Yoga, Yantra Yoga and Yin Yoga

Recent publications *(links last checked January 2022, some might require manual copy/paste in a browser)*

1. Clinical evaluation of a novel transmission detector for 3D quality assurance during of IMRT and SBRT. **G. Gueorguiev**, F. Khan, D. Toomeh, D. Khateri, C. Cotter, M. Young, J. Turcotte, B. Crawford, G. Sharp, M. MahD ***2017*** Biomedical Physics & Engineering Express, v.3, n.5 https://doi.org/10.1088/2057-1976/aa7e9f
2. Effects of Excess Breathing Motion on Proton Dose Coverage. J. Phillips, **G. Gueorguiev**, C. Grassberger, N.C. Choi, H. Paganetti, G.C. Sharp. ***2015***, International Journal of Radiation Oncology, Biology, and Physics, Volume 93, Issue 3, E435, https://doi.org/10.1016/j.ijrobp.2015.07.1655
3. Clinical implementation and error sensitivity of a protocol for 3D thoracic and prostate IMRT quality assurance. **G. Gueorguiev**, C. Cotter, J. Turcotte, B. Crawford, G. Sharp, M. MahD, Journal of Applied Clinical Medical Physics, [S.l.], v.16, n.5, Sep.***2015***, ISSN 15269914, https://doi.org/10.1120/jacmp.v16i5.5392
4. Computing proton dose to irregularly moving targets. J. Phillips, **G. Gueorguiev**, J. Shackleford, C. Grassberger, S. Dowdell, H. Paganetti, G. Sharp ***2014*** *Phys. Med. Biol.* 59 4261 https://doi.org/10.1088/0031-9155/59/15/4261

5. An accurate, differential approach for proton pencil beam computation in heterogeneous media. M. Desplanques, J. Phillips, Y. Park, **G. Gueorguiev**, G. Magro, A. Mairani, M. Ciocca, M. Riboldi, A. Pella, G. Baroni, G.C. Sharp. Physica Medica November, ***2015*** Volume 31, Supplement 2, Page e26 https://doi.org/10.1016/j.ejmp.2015.10.010
6. 3D patient pre-treatment QA for IMRT, VMAT and SBRT - clinical experience (first author, in preparation, IOP Biomedical Physics & Engineering Express)
7. Proton dose calculation for irregular motion using a sliding interface (co-author, in preparation, Physics in Medicine and Biology)

Relevant conference proceedings and abstracts

1. Efficiency and Accuracy Improvements for Patient Plan Quality Assurance with a Passive Scattering Proton Therapy System. B. Tonner, C. Curley, **G. Georgiev**, D. Murff, P. Marvin, R. Tokarz, Journal of Applied Clinical Medical Physics, ***2019*** May; 20(5): 144–179 https://doi.org/10.1002/acm2.12588
2. A Comprehensive Patient Specific, Structure Specific, Pre-Treatment 3D QA Protocol for IMRT, SBRT and VMAT-Clinical Experience. **G. Gueorguiev**, C. Cotter, M. Young, D. Toomeh, F. Khan, B. Crawford, J. Turcotte, M. MahD, G. Sharp. 58 American Association of Physicists in Medicine annual meeting ***2016***, SU-FT-227 http://dx.doi.org/10.1118/1.4956366
3. Commissioning Constant Dose Rate VMAT in the Raystation Treatment Planning System for a Varian Clinac IX. J. Pursley, **G. Gueorguiev**, H. Prichard, D. Gierga. 58 American Association of Physicists in Medicine annual meeting ***2016***, SU-FT-344 http://dx.doi.org/10.1118/1.4956529
4. Proton Dose Calculation for Irregular Motion Using a Sliding Interface. J. Phillips, **G. Gueorguiev**, C. Grassberger, H. Paganetti, G. Sharp. 57 American Association of Physicists in Medicine annual meeting ***2015,*** SU-E-T-639 http://dx.doi.org/10.1118/1.4925002
5. Validation of a differential approach for proton pencil beam computation in heterogeneous medium. M. Desplanques, J. Phillips, Y. Park, **G. Gueorguiev**, G. Magro, A. Mairani, M. Ciocca, G. Baroni, G. Sharp. Particle Therapy Co-Operative Group (PTCOG) ***2015***
6. Clinical implementation of a novel transmission detector for 3D quality assurance during radiation therapy. **G. Gueorguiev**, F. Khan, C. Cotter, J. Turcotte, B. Crawford, G. Sharp, M. Mah'D, World Congress of Medical Physics, Canada, ***2015*** SP057.2
7. An open-source treatment planning system for research in particle therapy: Implementation and dosimetric evaluation. M. Desplanques, **G. Gueorguiev**, G. Sharp. World Congress of Medical Physics, Toronto, Canada, ***2015***, PS04.087
8. Error Sensitivity and Superiority of a Protocol for 3D IMRT Quality Assurance. **G. Gueorguiev**, C. Cotter, J. Turcotte, G. Sharp, M. MahD, B. Crawford. 56 American Association of Physicists in Medicine annual meeting ***2014***, SU-E-T-152 http://dx.doi.org/10.1118/1.4888482
9. Open Source Software for Proton Treatment Planning in Heterogeneous Medium. M. Desplanques, K. Wang, J. Phillips, **G. Gueorguiev**, G. Baroni, G. Sharp. 56 American Association of Physicists in Medicine annual meeting ***2014***, TH-A-19A-1 http://dx.doi.org/10.1118/1.4889534
10. Clinical implementation of a protocol for 3D IMRT quality assurance. **G. Gueorguiev**, C. Cotter, J. Turcotte, B. Crawford, G. Sharp, M. MahD. 2nd International Conference on Radiation Protection in Medicine, Varna, Bulgaria, ***2014***
11. A Protocol for 3D IMRT Quality Assurance of Prostate Radiotherapy. **G. Gueorguiev**, G. Sharp, M. MahD, J. Turcotte, B. Crawford. 55 American Association of Physicists in Medicine annual meeting ***2013***, SU-E-T-189 http://dx.doi.org/10.1118/1.4814624
12. Computing Proton Dose to Irregularly Moving Targets. J Phillips, **G. Gueorguiev**, J. Shackleford, C. Grassberger, S. Dowdell, H. Paganetti, G. Sharp. 55 American Association of Physicists in Medicine annual meeting ***2013***, TU-A-108-6 http://dx.doi.org/10.1118/1.4815329
13. Dose perturbations caused by gold fiducial CT artifacts during proton lung radiation treatment. **G. Gueorguiev**, M. MahD, G. Sharp. World Congress of Thoracic Imaging ***2013***, SO-0070 (Young Investigator Award won) http://dx.doi.org/10.1016/S0169-5002(13)70347-7