

**UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES  
GRADUATE FACULTY APPLICATION**

1. Name: Ganesh Narayanasamy

2. UAMS Graduate Program Sponsor: Steven Post Major field: Pathobiology

3. Present UAMS academic title or administrative position: Assistant Professor

Date appointed this rank/position: 06/01/2015 Employed by: Department of Radiation Oncology, UAMS

4. **Comments of Department Chair/Head or Program Director including: evidence of scholarly development, effectiveness as a teacher, quality of publications and reallocation of duties if this application is approved.**

I have known Ganesh Narayanasamy, PhD for over an year now and have found him to to be independent thinker with a good work ethic. He has effective communication skills and asks critical questions during the tumor board meetings. With 23 manuscript publications in peer-reviewed journals and 42 abstract publications in international level conferences, Dr Narayanasamy has set high standards for someone with his experience. He was involved in didactic teaching in a academic position and excelled in teaching Medical physics to residents and graduate students. As of now, he can contribute up to 10% of effort towards teaching and I do not expect a reallocation of responsibilities. He will be a fantastic addition as an adjunct faculty in the UAMS graduate program.

H. Bame 03 Jun 2016  
 Department Chair/Head or Program Director      Date      Graduate Council Representative

I have read the comments of my Department Chair/Head or Program Director and I  do, do not (circle one) wish to supply additional information in support of my application.

N. Canel      06/23/2016  
 Applicant's Signature      Date

**Approvals**

[Signature]      8-18-16  
 Chair, Graduate Faculty Committee      Date

[Signature]      8-18-16  
 Chair, Graduate Council      Date

[Signature]      8-18-16  
 Dean of the Graduate School      Date

5. **List your planned involvement in graduate education (courses, theses, dissertations):**

I would like to contribute to mentoring, guiding and teaching MD, PhD, and MS level graduate students, residents in the UAMS graduate school with their dissertations, thesis and didactic courses. In the past, I have taught didactic courses titled "Interactions of Radiation with Matter", "Radiation Hazards and Protection", "Principles of Treatment Planning", "Physics Measurements in Radiotherapy" based on famous text books titled "Introduction to Radiological Physics and Radiation Dosimetry" by Attix, "Physics of Radiation Therapy" by Faiz Khan, "Atoms, Radiation and Radiation Protection" by Turner, "Shielding Techniques for Radiation Oncology Facilities" by McGinley, AAPM Task group reports et al.

6. **Briefly summarize your experience in graduate-level classroom teaching:**

My past experiences include teaching graduate level courses in the field of Medical Physics / Radiation Oncology at the University of Texas Health Science Center at San Antonio, TX (where I served as Medical Physics resident for 2 years) and at the University of Kentucky Medical Center (where I served as a Post-Doctoral Scholar in Medical Physics for over 3.5 years). I have contributed to teaching didactic courses to residents, graduate students, and medical dosimetry students that have helped many in successful completion of examinations including American Board of Radiology (ABR), Radiation Oncology Physics (Raphex), Medical Dosimetrist Certification Board (MDCB) exams. Those that I have taught have gone on to become successful ABR certified Radiation Oncologists, ABR certified Medical Physicists and MDCB certified Medical Dosimetrists.

7. **Briefly summarize your experience in research and student research mentoring:**

In addition to teaching, I am keenly focused on clinical research that have direct bearing on cancer patients who are currently undergoing or underwent radiation therapy. I have performed cutting edge research in state-of-art technologies involved in stereotactic radiosurgery (eg., GammaKnife), stereotactic body radiation therapy (eg., BrainLAB), Image Guided Radiotherapy (IGRT), Intensity Modulated Radiotherapy (IMRT), radiation dosimetric measurements, dosimetric quality assurance (QA), radiation biology and deformable image registration (DIR). Student research mentorship includes teaching various clinical procedures, machine QA methods in radiotherapy. Some of the recent clinical research topics include: adjuvant therapy for prostate tumor radiation therapy; comparison of different QA methods of DIR with known errors in Head & Neck cancer patients; patient specific IMRT quality assurance with films, ionization chambers and detector arrays; dosimetric comparison of water phantoms; dosimetric and radiation biological comparison of planned dose with measured dose distributions etc.

8. **Attach Curriculum Vita** showing educational background (including institutions attended, degrees awarded and dates), honors or awards received, scholarly or professional organization affiliations, teaching experience (give school, dates and advanced and graduate subjects taught), including student theses and/or dissertations supervised. Cite publications and research in progress.

06/21/2016

**GANESH NARAYANASAMY PHD, DABR**

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**PROFESSIONAL EXPERIENCE**

06/2015 onwards **Assistant Professor**, University of Arkansas for Medical Sciences  
07/2013–05/2015 Medical Physics Resident, UTHSCSA, TX (CAMPEP-accredited)  
12/2009–06/2013 Post-Doctoral Scholar, Radiation Medicine, University of Kentucky  
05/2008–08/2008 Summer Intern, Department of Interventional Radiology, Philips Research  
01/2006–12/2009 Graduate Research Assistant, Department of Radiology, University Michigan  
02/2004–12/2005 Research Technician, Department of Radiology, University of Michigan

**EDUCATION**

**Ph.D.** 01/2006 – 12/2009 Applied Physics, University of Michigan  
Title: *“Advances in Biomedical Applications and Assessment of ultrasound non-rigid image registration”*  
**M.S.** 06/2002 – 12/2003 Electrical Engineering, University of Michigan  
**M.S.** 08/2000 – 05/2002 Applied Physics, University of Michigan  
**B.Tech** 08/1994 – 05/1999 Bachelor of Technology in Engineering Physics, IIT Bombay, India

**CERTIFICATIONS**

**American Board of Radiology Certified Medical Physicist** (May 2014, #P5789)  
**State of Texas Licensed Medical Physicist** (Aug 2014, #MP10602)  
**Qualified Medical Physicist for HDR Brachytherapy in State of Arkansas** (July 2015)  
**Qualified Medical Physicist for GammaKnife in State of Arkansas** (Nov 2015)

**CERTIFICATE TRAINING**

**GammaKnife Physicists Training, Washington Hospital, San Jose, CA** (Aug 2015).  
**Integrated Course in Biology and Physics of Radiation Oncology, Detroit, MI** (May 2016).

**CLINICAL RADIATION THERAPY PHYSICS EXPERIENCE**

- Commissioning of Clinical Linear Accelerator (LINAC)  
Performed Commissioning on Elekta’s VersaHD and Pinnacle TPS
- LINAC Quality Assurance (QA)  
Conducted Annual, Monthly, Daily QA evaluation; provided analysis and physics oversight in resolving machine issues; coordinated repair & maintenance with engineer
- Treatment planning  
Created arc, intensity modulated, image-guided and 3D-conformal plans in Pinnacle, Eclipse TPS
- Stereotactic radiosurgery in cranium  
Treatment planning & QA – BrainLAB’s iPlan and Elekta’s Gamma-Knife Perfexion
- High Dose Rate Brachytherapy  
Executed treatment planning; Performed <sup>192</sup>Ir source exchange QA on remote afterloader
- Gynecological Low Dose Rate Brachytherapy based on <sup>137</sup>Cs sources  
Performed treatment planning and QA of Gynecological implants

- Prostate Low Dose Rate Brachytherapy based on  $^{125}\text{I}$  seed implant  
Executed treatment planning on trans-rectal ultrasound volume
- CT Simulators  
Performed Annual, Monthly, Daily QA of GE LightSpeed 16-slice CT scanner
- Special Procedures – Eye plaque ( $^{125}\text{I}$  seeds), Total Body Irradiation  
Executed patient simulation, treatment planning and *in-vivo* dosimetry
- Image Registration  
Well versed in Velocity, Matlab based rigid, affine and deformable registration algorithms
- Accreditation of RTOG protocol (RTOG 1304 on Breast tumor)
- Other aspects of clinical physics experience  
Conducted 2<sup>nd</sup> check and weekly physics chart checks; Participated in weekly chart rounds; Prepared medical physics consult procedures and paperwork

### TEACHING EXPERIENCE

- Mentor, Medical Physics Resident  
Department of Radiation Oncology, 2015 onwards  
University of Arkansas for Medical Sciences, Little Rock, AR
- Part-time Instructor, University of Texas Health Science Center at San Antonio, TX  
Department of Radiation Oncology, 2013 – 2014  
Graduate course Taught: “Fundamentals of Radiation Dosimetry” to Medical Physics student  
Texts: “Introduction to Radiological Physics and Radiation Dosimetry” by Frank H Attix  
“Physics of Radiation Therapy” by Faiz M Khan
- Part-time Instructor, University of Texas Health Science Center at San Antonio, TX  
Department of Radiation Oncology, 2014  
Graduate course Taught: “Physics Measurements in Radiotherapy I” to Med Physics student  
Text: AAPM TG reports
- Mentor, University of Texas Health Science Center at San Antonio, TX  
Graduate students preparing for ABR Certification Exam-Therapeutic Radiological Physics
- Part-time Instructor, University of Texas Health Science Center at San Antonio, TX  
Department of Radiation Oncology, 2014  
Graduate course Taught: “Principles of Treatment Planning I” to Medical dosimetry students
- Instructor, University of Kentucky, Lexington, KY  
Department of Radiation Medicine, 2012 – 2013  
Graduate course Taught: “Radiation Hazards and Protection” to Medical Physics students  
Texts: “Shielding Techniques for Radiation Oncology Facilities” by P H McGinley; NCRP 151
- Instructor, University of Kentucky, Lexington, KY  
Department of Radiation Medicine, 2012 – 2013  
Graduate course Taught: “Interactions of Radiation with Matter” to Medical Physics students  
Text: “Atoms, Radiation and Radiation Protection” by James E Turner
- Instructor, University of Michigan, Ann Arbor, MI  
Department of Physics, 2000 – 2001  
Teaching assistant “Electro-Magnetism Lab” to undergraduate physics students

## **RESEARCH EXPERIENCE**

### **Medical Physics Resident, University of Texas Health Science Center at San Antonio**

- A systematic study of mono-isocentric techniques for the treatment of multiple metastasis in Brainlab's Multiple Metastasis Elements (MME) software
- Dosimetric comparison between 3D conformal, IMRT and VMAT techniques with coplanar and non-coplanar beams for SBRT of lung tumor.
- Evaluated generalized dose response gradient to determine which organ gets most affected from a small increase in the prescription dose.
- Radio-biological Evaluation of IMRT treatments of Head and Neck cancer patients
- Comparison between measured Tissue Phantom Ratio (TPR) values and TPR calculated From PDD values with and without Peak Scatter correction factor (PSF) in 6MV Beam

### **Post-Doctoral Scholar, University of Kentucky Cancer Center**

- Proved that Gamma-Knife brain dose depends on lesion volume than on number, shape, and location
- Evaluation of SIB and SqIB treatment of Head/Neck cancer using empirical radiobiological modeling
- Designed IGRT optimization techniques for normal tissue dose reduction using conebeam CT, 3DCT
- Designed dose summation of treatment plans from LINAC, TomoTherapy and GammaKnife units

### **Summer Intern, Philips Research North America – Interventional Guidance & Technology**

- Integration of sensor and image registration information for Calypso interventional navigation system
- Designed algorithm for improved position sensor for wireless fiducials in a EM distorted space

### **Graduate Research Assistant & Research Technician, Department of Radiology, University of Michigan**

- Performed image-guided therapy assessment using non-rigid image registration of sequentially scanned breast to within  $86\pm 8\%$  accuracy, as judged in a reader study by 3 senior radiologists
- Addressed positioning and motion issues using non-rigid image registration yielding accuracy  $\pm 3\text{mm}$
- Achieved significant time savings in registration based contouring, as confirmed by 3 radiologists
- Enhanced Doppler ultrasound imaging for therapy assessment by blood flow changes near tumor
- Identified 3 vascular markers for independent validation of image registration accuracy
- Team-developed rigid registration model for 3D ultrasound to 3D Digital Breast Tomosynthesis
- Designed biometric identification system using 3D ultrasound imaging of internal finger structures that gave 96% accuracy using registration, statistical analysis and reader study with 4 radiologists

## **LEADERSHIP / SERVICE EXPERIENCE**

- AAPM Committee appointments – Member, Imaging for Treatment Planning working group 2012 onwards.

- AAPM Committee appointments – Member, Working Group on Conformal Small Animal Irradiation Devices 2015 onwards
- AAPM Committee appointments – Member, Imaging for Treatment Verification working group 2012 – 2013
- Reviewer for *Translational Research Institute, UAMS* – Multidisciplinary Partner Network Pilot program since 2015.
- Reviewer of *Technology in Cancer Research & Treatment (TCRT)* since 2015
- Reviewer of *Journal of Medical Physics (JMP)* since 2015
- Reviewer of *International Journal of Radiation Oncology Biology Physics (Red Journal)* since 2014
- Reviewer of *Radiotherapy and Oncology (Green Journal)* since 2014
- Reviewer of *Physics in Medicine and Biology (PMB)* since 2014
- Reviewer of *International Journal of Cancer Therapy and Oncology (IJCTO)* since 2014
- Reviewer of *Physica Medica: European Journal of Medical Physics* since 2014
- Reviewer of *International Journal of Medical Physics Clinical Engineering & Radiation Oncology (IJMPCERO)* since 2014
- Reviewer of *Medical Physics* since 2012
- Reviewer of *Medical and Biological Engineering and Computing* (Springer – Berlin) since 2011
- Reviewer of *Journal of Applied Clinical Medical Physics (JACMP)* since 2010

#### **AWARD & HONORS**

- Winner, Clinical Trial Protocol Development in the IBPRO meeting, Detroit, MI in 05/2016.
- Travel Award, American College of Radiology – Texas Radiological Society Annual Meeting in 03/2015
- Runner-up award for best research presentation, AAPM Ohio River Valley meeting in 03/2013
- *Research Assistantship*: Graduate assistantship and full tuition fee waiver at University of Michigan, 2000 – 2004; 2006 – 2009.
- *Teaching Assistantship*: Taught 40 students for 3 semesters in Electromagnetism Lab, University of Michigan 2000 – 2001.
- *Performance*: Ranked within top 0.5% of 200,000 students in the entrance exam for IITs in India

#### **PROFESSIONAL MEMBERSHIP**

- American Association of Physicists in Medicine AAPM (since 2006)
- American College of Radiology, Texas Radiological Society (2014 – 2016)
- Radiological Society of North America RSNA (2006 – 2009)
- American Institute of Ultrasound in Medicine AIUM (2005 – 2008)
- IEEE – Engineering in Medicine and Biology Sciences EMBS (2007)

#### **INVITED SESSION SPEAKER**

**G Narayanasamy**, J Feddock, J Gleason, R McGarry, J Molloy. “Dosimetric verification of stereotactic body radiation therapy using Conebeam computed tomography images”, **American College of Medical Physics Annual Meeting** 2011.

#### **PEER REVIEWED PUBLICATIONS**

**Under Review:**

- 1) **G Narayanasamy**, X Zhang, A S Meigooni, N Paudel, S Morrill, S Maraboyina, L Peacock, J Penagaricano, "Therapeutic benefits in grid irradiation on Tomotherapy for bulky, radiation resistant tumors", Under Review, *Radiotherapy & Oncology*.
- 2) M Obeidat, **G Narayanasamy**, K Cline, S Stathakis, J Pouliot, H Kim, N Kirby, "Comparison of different QA methods for deformable image registration to the known errors for prostate and head-and-neck virtual phantoms", Under Review, *Biomedical Physics & Engineering Express*.
- 3) **G Narayanasamy**, D Saenz, S Stathakis, N Papanikolaou, "Dosimetric Validation of Monaco treatment planning system on an Elekta VersaHD linear accelerator", Under Review, *Journal of Applied Clinical Medical Physics*.
- 4) **G Narayanasamy**, S Stathakis, A Gutierrez, E Pappas, R Crownover, J Floyd II, N Papanikolaou, "A Systematic Analysis of Mono-Isocentric Techniques for the Treatment of Multiple Metastases: Initial Experience," Under Review, *Technology in Cancer Research & Treatment*.
- 5) **G Narayanasamy**, G Avila, P Mavroidis, N Papanikolaou, A Gutierrez, D Baacke, Z Shi, S Stathakis, "Comparison of Composite Prostate Radiotherapy Plan Doses with Dependent and Independent Boost Phases," Under Review, *Australasian Physical & Engineering Sciences in Medicine Oncologica*.
- 6) N Paudel, **G Narayanasamy**, X Zhang, X Liang, P Mavroidis, A Pyakuryal, SM Morrill, "Dosimetric and radiobiological evaluation for quality assurance of IMRT and VMAT plans", Under Review, *Physica Medica: European Journal of Medical Physics*.
- 7) S Sharma, **G Narayanasamy**, R Clarkson, M Chao, E Moros, X Zhang, Y Yan, M Boerma, N Paudel, S Morrill, P Corry, "Study of image qualities from 6D-robot based CBCT imaging system of small animal irradiator", Under Review, *Technology in Cancer Research & Treatment*.
- 8) SS Hussain, CB Livi, P Rivas, JW Basler, GP Swanson, RG Bedolla, C Chen, TH Huang, **G Narayanasamy**, N Papanikolaou, I Yeh, RL Reddick, BH Pollock, DC Chan, R Ghosh, AP Kumar, "Nexrutine-mediated inhibition of AKT/RPS6KB1/NFκB axis as a potential adjuvant for prostate cancer radiation therapy", Under Review, *Clinical Cancer Research*.

**Published/Accepted:**

- 9) X Zhang, J Penagaricano, **G Narayanasamy**, R J Griffin, S Maraboyina, N Paudel, P Corry, S Morrill, "Three-dimensional conformal planning using low-segment multi-criteria optimization for hippocampal avoidance whole brain radiotherapy", Accepted, *Journal of Radiation Oncology*.
- 10) **G Narayanasamy**, W Cruz, D Saenz, S Stathakis, N Papanikolaou, N Kirby, "Effect of Electron Contamination on in-vivo Dosimetry for Lung Block Shielding during TBI," *Journal of Applied Clinical Medical Physics* 17(3):1, 2016.
- 11) N Paudel, **G Narayanasamy**, EY Han, B Thapa, X Zhang, X Liang, JA Penagaricano, SM Morrill, "Impact of jaw position on sparing organs at risk in three-dimensional conformal radiation therapy of pancreatic cancer", *International Journal of Cancer Therapy and Oncology* 4(1), 2016. doi: 10.14319/ijcto.41.17
- 12) S Sharma, **G Narayanasamy**, J Webber, M Boerma, RClarkson, EG Moros, PM Corry, RJ Griffin, "Advanced Small Animal Conformal Radiation Therapy Device," Accepted, *Technology in Cancer Research & Treatment* 2016. doi: 10.1177/1533034615626011
- 13) **G Narayanasamy**, D Saenz, W Cruz, Chul S Ha, N Papanikolaou, S Stathakis, "Commissioning an Elekta VersaHD Linear Accelerator," *Journal of Applied Clinical Medical Physics* 17(1): 179-190, 2016. doi: 10.1120/jacmp.v17i1.5799
- 14) D Saenz, **G Narayanasamy**, W Cruz, N Papanikolaou, S Stathakis, "Pinnacle<sup>3</sup> modeling and end-to-end dosimetric testing of a Versa HD linear accelerator with the Agility head and

- flattening-filter-free modes", *Journal of Applied Clinical Medical Physics* 17(1): 192-206, 2016. doi: 10.1120/jacmp.v17i1.5808
- 15) W Cruz, **G Narayanasamy**, N Papanikolaou, S Stathakis, "Dosimetric Comparison of Water Phantoms, Ion Chambers, and Data Acquisition Modes for Linac Characterization," *Radiation Measurements* 82:108 – 114, 2015. doi:10.1016/j.radmeas.2015.09.005
- 16) **G Narayanasamy**, T Zalman, P Mavroidis, N Papanikolaou, C Ha, S Stathakis, "Evaluation of Dosimetry Check Software for IMRT patient specific Quality Assurance", *Journal of Applied Clinical Medical Physics* 16(3):329 – 338, 2015. doi:10.1120/jacmp.v16i3.5427
- 17) **G Narayanasamy**, W Cruz, P Mavroidis, N Papanikolaou, S Stathakis, "Comparison between measured Tissue Phantom Ratio values and Calculated From Percent Depth Doses with and Without Peak Scatter factor (PSF) correction in 6MV Beam", *International Journal of Cancer Therapy and Oncology* 3(2), 2015. doi:10.14319/ijcto.0302.4
- 18) S Stathakis, P Mavroidis, **G Narayanasamy**, M Markovic, P Myers, N Papanikolaou, "Stereotactic Body Radiation Therapy patient specific quality assurance using a two-dimensional array at extended Source to Surface Distance", *Journal of Balkan Union of Oncology* 20(4):1154 – 1163, 2015.
- 19) **G Narayanasamy**, D Granatowicz, D Baacke, Y Li, A Gutierrez, N Papanikolaou, S Stathakis, "A Comparison between Three-Dimensional Conformal Radiotherapy, Intensity-Modulated Radiotherapy, and Volumetric-Modulated Arc Therapy Techniques for Stereotactic Body Radiotherapy of Lung Tumors", *International Journal of Medical Physics, Clinical Engineering and Radiation Oncology* 4(2), 104-112, 2015. doi:10.4236/ijmpcero.2015.42014
- 20) W Cruz, **G Narayanasamy**, P Mavroidis, N Papanikolaou, C Ha, S Stathakis, "Patient specific IMRT Quality Assurance with Film, Ionization Chamber, Detector Arrays: Our Institutional Experience", *Radiation Physics and Chemistry* 115, 12 – 16, 2015. doi:10.1016/j.radphyschem.2015.06.002
- 21) **G Narayanasamy**, A Pyakuryal, S Pandit, J Vincent, C Lee, P Mavroidis, N Papanikolaou, M Kudrimoti, TT Sio, "Radiobiological Evaluation of Intensity Modulated Radiation Therapy (IMRT) Treatments of Patients with Head and Neck Cancer: A Dual-Institutional Study", *Journal of Medical Physics* 40(3), 165 – 169, 2015. [PMC4594386](#)
- 22) **G Narayanasamy**, J Feddock, J Gleason, R McGarry, J Molloy, "CBCT-based Dosimetric Verification and Alternate Planning Techniques to Reduce the Normal Tissue Dose in SBRT of Lung Patients", *International Journal of Cancer Therapy and Oncology* 3(2) 2015. doi: 10.14319/ijcto.32.18
- 23) E Petrou, **G Narayanasamy**, E Lavdas, S Stathakis, N Papanikolaou, BK Lind, P Mavroidis, "Evaluation of Generalized Gamma as a tool for Treatment Planning Optimization," *International Journal of Cancer Therapy and Oncology* 2(4) 2014. doi:10.14319/ijcto.0204.18
- 24) S Stathakis, P Mavroidis, C Shi, J Xu, KI Kauwelo, **G Narayanasamy**, N Papanikolaou, "Gamma plus index: A new evaluation parameter for quantitative quality assurance", *Computer Methods and Programs in Biomedicine* 114(1), 60 – 69, 2014. [PMID:24508212](#)
- 25) **G Narayanasamy**, A Smith, E van Meter, R McGarry, J Molloy, "Total target volume is a better predictor of whole brain dose from GammaKnife than the number, shape or location of the lesions", *Medical Physics* 40(9), 091714, 2013. [PMCID:PMC4108722](#); [PMID: 24007147](#)
- 26) M Matinfar, **G Narayanasamy**, L Gutierrez, R Chan, A Jain, "Absolute vs. Relative error characterization of electromagnetic tracking accuracy", *SPIE International Society for Optics and Photonics - Medical Imaging* 7625, 762524, 2010. doi:10.1117/12.844326
- 27) PL Carson, B Wang, GL LeCarpentier, MM Goodsitt, C Lashbrook, R Pinsky, **G Narayanasamy**, JB Fowlkes, K Saitou, "Local compression in automated breast ultrasound in the mammographic geometry" *IEEE-International Ultrasonics Symposium*, 1787 – 1790, 2010



- 28) **G Narayanasamy**, G LeCarpentier, M Roubidoux, J Fowlkes, AF Schott, PL Carson, "Spatial Registration of Temporally Separated Whole Breast 3D Ultrasound Images" *Medical Physics* 36(9), 4288 – 4300, 2009. [PMCID: PMC2749445](#); [PMID: 19810503](#)
- 29) **G Narayanasamy**, J Fowlkes, O Kripfgans, J Jacobson, M De Maeseneer, R Schmitt, P Carson, "Ultrasound of the Fingers for Human Identification Using Biometrics" *Ultrasound in Medicine and Biology* 34(3), 392 – 399, 2008. [PMID: 17993241](#)
- 30) **G Narayanasamy**, G LeCarpentier, S Zabuawala, J Fowlkes, M Roubidoux, S Sinha, P Carson, "Non-rigid registration of three-dimensional grayscale and Doppler ultrasound breast images", *IEEE-Engineering in Medicine & Biology Society (EMBS)* 91 – 94, 2007. [PMID: 18001896](#)
- 31) A Das, K Kumar, **G Narayanasamy**, "A Model for Interacting Instabilities and Texture Dynamics of Patterns" *Physical Review Letters E*, 64(1), 2001. doi:10.1103/PhysRevE.64.016301

### CONFERENCE PROCEEDINGS & INVITED PRESENTATIONS

- 1) **G Narayanasamy**, X Zhang, A Meigooni, X Liang, N Paudel, S Morrill, S Maraboyina, L Peacock, J Penagaricano, "Therapeutic Benefit in Spatially Fractionated Radiotherapy (GRID) Using Helical Tomotherapy", *Oral presentation* at the 58<sup>th</sup> American Association of Physicists in Medicine (AAPM) Annual Meeting, 2016
- 2) D Desai, **G Narayanasamy**, S Srinivasan, H Elasmr, R Zwicker, E Johnson, "Study of Dose Falloff Slope in RapidArc Planning of Lung SBRT", presentation at the 58<sup>th</sup> AAPM Annual Meeting, 2016
- 3) N Paudel, **G Narayanasamy**, X Zhang, J Penagaricano, P Mavroidis, A Pyakuryal, E Han, X Liang, D Kim, S Morrill, "Radiobiological-Cum-Dosimetric Quality Assurance of Complex Radiotherapy Plans", presentation at the 58<sup>th</sup> AAPM Annual Meeting, 2016
- 4) X Zhang, J Penagaricano, **G Narayanasamy**, R Griffin, S Maraboyina, N Paudel, C Peter, S Morrill, "Three-Dimensional Conformal Planning Using Low-Segment Multi-Criteria Optimization for Hippocampal Avoidance Whole Brain Radiotherapy", presentation at the 58<sup>th</sup> AAPM Annual Meeting, 2016
- 5) X Liang, D Zheng, X Zhang, **G Narayanasamy**, S Morrill, J Penagaricano, N Paudel, Z Li, "Dosimetric Impacts of Various Uncertainties in Cervical Cancer HDR Brachytherapy: Are Conventional Point Doses Good Surrogates for 3D Dosimetry?", presentation at the 58<sup>th</sup> AAPM Annual Meeting, 2016
- 6) J Wei, J Penagaricano, **G Narayanasamy**, M Chao, "Three-Dimensional Cluster Model in Inhomogeneous Dose Distribution", presentation at the 58<sup>th</sup> AAPM Annual Meeting, 2016
- 7) A Pyakuryal, **G Narayanasamy**, TT Sio, C Lee, "Clinical Application of Radiobiological Modeling in the Histogram Analysis in Radiation Therapy (HART): An Open-Source Software System in Radiation Oncology", presentation at the 57<sup>th</sup> American Society for Therapeutic Radiation Oncology (ASTRO) Annual Meeting, 2015
- 8) **G Narayanasamy**, D Saenz, W Cruz, P Mavroidis, N Papanikolaou, S Stathakis, "Commissioning An Elekta VersaHD Linear Accelerator", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015
- 9) **G Narayanasamy**, C Bosse, D Saenz, W Cruz, P Mavroidis, N Papanikolaou, S Stathakis, "Commissioning of Monaco Treatment Planning System On An Elekta VersaHD Linear Accelerator", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015
- 10) D Saenz, **G Narayanasamy**, W Cruz, N Papanikolaou, S Stathakis, "End-To-End Dosimetric Testing of a Versa HD Linear Accelerator with the Agility Head Modeled in Pinnacle<sup>3</sup>", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015

- 11) C Bosse, **G Narayanasamy**, N Kirby, P Mavroidis, N Papanikolaou, S Stathakis, "Dose Calculation Comparisons Between Monaco, Pinnacle and Eclipse Treatment Planning Systems", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015
- 12) B Tuazon, **G Narayanasamy**, N Kirby, P Mavroidis, N Papanikolaou, S Stathakis, "Evaluation and Comparison of Second-Check Monitor Unit Calculation Software with Pinnacle Treatment Planning System", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015
- 13) N Papanikolaou, **G Narayanasamy**, S Stathakis, E Pappas, N Kirby, P Mavroidis, R Crownover, A Gutierrez, "A Systematic Analysis of Mono-Isocentric Techniques for the Treatment of Multiple Metastasis", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015.
- 14) K Cline, **G Narayanasamy**, M Obediat, D Stanley, S Stathakis, H Kim, N Kirby, "Comparative Analysis of MIM and Velocity's Image Deformation Algorithm Using Simulated KV-CBCT Images for Quality Assurance", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015.
- 15) M. Obeidat, **G. Narayanasamy**, K. Cline, S. Stathakis, J. Pouliot, H. Kim, N. Kirby, "Comparison of Different QA Methods for Deformable Image Registration to the Known Errors for Prostate and Head-And-Neck Virtual Phantoms", presentation at the 57<sup>th</sup> AAPM Annual Meeting, 2015.
- 16) **G Narayanasamy**, A Pyakuryal, S Pandit, TT Sio, J Vincent, MR Kudrimoti, Y Li, "Radiobiological Evaluation of IMRT Treatment Of Head And Neck Patients: Multi-Institutional Study", presentation at the 56<sup>th</sup> ASTRO Annual Meeting, 2014
- 17) AP Pyakuryal, S Pandit, **G Narayanasamy**, S Jang, WE Lee, TT Sio, "Radio-Biologic Evaluation of Simultaneously Integrated Boost (SIB) IMRT Methods in Head and Neck Cancer: Multi-Institutional Study", presentation at the 56<sup>th</sup> ASTRO Annual Meeting, 2014.
- 18) **G Narayanasamy**, W Cruz, C Breton, A Gutierrez, P Mavroidis, N Papanikolaou, S Stathakis, "Comparison of Measured Tissue Phantom Ratios (TPR) Against Calculated From Percent Depth Doses (PDD) with and Without Peak Scatter Factor (PSF) in 6MV Open Beam", presentation at the 56<sup>th</sup> AAPM Annual Meeting, 2014
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