

## **Curriculum Vitae**

Joubin Nasehi Tehrani, Ph.D, MSc, DABR  
Assistant Professor, Department of Radiation Oncology  
University of Maryland Upper Chesapeake, Kaufman Cancer Center

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### **Contact Information**

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Foreign Languages: Farsi (native)

### **Education**

1993 - 1999 B.S., Biomedical Engineering, The University of Shahid Beheshti (Tehran, Iran)  
1999 - 2002 M.S., Biomedical Engineering The University of Tehran, School of Medical Science (Tehran, Iran)  
2009 - 2013 Ph.D., Biomedical Engineering, The University of Sydney, Australia,  
Thesis Advisor: Dr. Alistair Mc Ewan  
Title of project: "3D Electrical Impedance Tomography Application in Cardiac Function Imaging."

### **Post Graduate Education and Training**

2012 - 2013 Postdoctoral fellow I, University of Sydney, Sydney, Australia  
2014 - 2016 Postdoctoral fellow II, UT Southwestern Medical Center, Dallas, Texas  
2016 – 2019 Residency, Medical Physics, University of Virginia Heath system

### **Certifications**

2021 Diplomate, American Board of Radiology, Therapeutic Physics (DABR)

### **Licensure**

Active Authorized user for HDR Brachytherapy, Maryland

### **Employment History**

### **Academic Appointments**

2019 (August) - Now Assistant professor, Physics, in the faculty of Department of Radiation Oncology at the University of Maryland School of Medicine

## **Other Employment**

2000-2007 Technical director, Danatashkhis, Tehran, Iran  
2007-2008 Instrumental Engineer, Pilkington, Qazvin, Iran  
2008-2009 Technical director, SMB Harwal Electric Pty Ltd, Sydney, Australia  
2009-2012 Research Assistant, Biomedical Engineering, University of Sydney, Australia

## **Professional Society Membership**

2002-present General Member, Iranian Association of Medical Physics (IAMP)  
2009-present General Member, Association of Engineers Australia  
2012-present General Member, American Association of Physicists in Medicine  
2018-present American Brachytherapy Society (ABS)

## **Honors And Awards**

2002 Ranked 1<sup>st</sup> in biomedical engineering graduates from Tehran University  
2009 Norman I Price Scholarship (The University of Sydney)  
2009 Australian Postgraduate Award  
2016 Young Investigator's Competition at AAPM 2016 Annual

## **Clinical Activities**

### **Clinical Expertise**

Therapeutic Physicist working clinical practice since 2019, board certified since 2021 (DABR)  
Clinical Linear Accelerator Annual and Monthly Calibration and Quality Assurance  
Patient-specific IMRT measurements using MapCheck, EPID-based portal dosimetry  
Patient chart check (verification, initial, weekly and End of treatment)  
Patient In vivo dosimetry measurement  
Treatment plan review and verification for photon, electron radiation treatments  
High dose-rate brachytherapy (HDR) Flexitron, QA Source exchange, and treatment.  
On-board imager annual and monthly calibration and quality assurance.

### **Local and National Service**

2023-present Communications committee (QSRC's subcommittee)  
2023-present Reviewer for the Ralph E. Powe Junior Faculty Award (ORAU)  
2022-present Physics residency application reviewers  
2012-present Reviewer, Mathematical Problems in Engineering  
2012-present Reviewer, Hindawi Journal of Clinical Monitoring and Computing (JCMC)  
2012-present Reviewer, International Conference on Biomedical Engineering and Biotechnology (ICBEB)  
2014-present Reviewer, Journal Medical Physics  
2022-Present Reviewer, Journal of Applied Clinical Medical Physics

## **Teaching Service**

### **Resident teaching**

2020-present	Philips monthly and annual CT scan QA
2022-present	Participate in physics resident rounds for preparing resident for ABR exams
2021-2022	(Machine QA DOS21.102) for Medical Dosimetry training

## **Undergraduate Student Teaching**

2009-2012 Lecturer assistant:

- Fundamental of Electrical & Electronic Engineering (Laboratory)
- Electrical Engineering Foundations (Laboratory)
- Electronic Circuit Design (Laboratory)
- Foundations of computer systems (Laboratory)

## **Publications**

### **Patents:**

1. Paul J Keall., **J. Nasehi Tehrani**, Ricky O'Brien, and Per Rugaard Poulsen. "Method to estimate real-time rotation and translation of a target with a single x-ray imager." U.S. Patent 9,314,219, issued April 19, 2016.

### **Peer-reviewed journal articles**

1. N. Riyahi-Alam, A. Ahmadian, **J. Nasehi Tehrani**, M. Guiti, M. A. Oghabian "Detection of Suspicious Microcalcifications in digital mammography using Fuzzy Logic, 2003
2. **J. Nasehi Tehrani**, C. Anderson, C. Jin, A. van Schaik, D. Holder and A. McEwan "Feasibility of electrical impedance tomography in hemorrhagic stroke treatment," Journal of Physiological Measurement, 224, pp. 1-4. and Wavelet Transform Coefficients," Iranian Journal of Medical Physics, 2010, vol. 3, no. 3, pp. 23-28.
3. **J. Nasehi Tehrani**, A. McEwan, C. Jin, A. Van Schaik (2011), "L1 regularization method in electrical impedance tomography by using the L1-curve (Pareto Frontier Curve)", Elsevier, Applied Mathematical Modelling, vol. 36, pp.1095-1105.
4. **J. Nasehi Tehrani**, C Jin, AL McEwan, (2012), "Modelling of an Oesophageal Electrode for Cardiac Function Tomography," Computational and Mathematical Methods in Medicine, Article ID 585786, pp. 1-10.
5. **J. Nasehi Tehrani**, T.I. Oh, C. Jin, A. Thiagalingam, A. McEwan, (2012), "Evaluation of different stimulation and measurement patterns based on an internal electrode: application in cardiac impedance tomography," Elsevier, Comput. Biol. Med., v. 42, no. 11 November 2012, pp. 1122–1132.
6. **J. Nasehi Tehrani**, Ricky T. O'Brien, Per Rugaard Poulsen, and Paul Keall, "Real-Time Estimation of Prostate Tumor Rotation and Translation with a kV Imaging System based on an Iterative Closest Point Algorithm" Phys Med Biol. v.58, no.23, 8517-8533 (2013).

7. Adnan Farooq, **J. Nasehi Tehrani**, Alistair Lee McEwan, Eung Je Woo and Tong In Oh "Improvements and artifact analysis in conductivity images using multiple internal electrodes" *Journal of Physiological Measurement*, v.35, no. 6, pp. 1125-1135 (2014).
8. Chen-Yu Huang, **J. Nasehi Tehrani**, Jin Aun Ng, Jeremy Booth, Paul Keall, "Six Degrees-of-Freedom Prostate and Lung Tumor Motion Measurements Using Kilovoltage Intrafraction Monitoring," *International Journal of Radiation Oncology\* Biology\* Physics* 91 (2), 368-375.
9. **J. Nasehi Tehrani**, Y. Yang, R. Werner; L. Wei, D. Low; X. Guo; J. Wang Sensitivity of tumor motion simulation accuracy to lung biomechanical modeling approaches and parameters", *Phys Med Biol.*, 2015.
10. **J. Nasehi Tehrani**, Alistair McEwan, and Jing Wang. "Lung surface deformation prediction from spirometry measurement and chest wall surface motion." *Medical Physics* 43, no. 10 (2016): 5493-5502.
11. Zhang, Y., **J. Nasehi Tehrani**, and J. Wang. "A Biomechanical Modeling Guided Cone Beam Computed Tomography Reconstruction Technique." *International Journal of Radiation Oncology• Biology• Physics* 96, no. 2 (2016): S99-S100.
12. Dutta, S. W., **J. Nasehi Tehrani**, H. Nourzadeh, B. D. Camarata, E. M. Janowski, and K. Wijesooriya. "Assessing Inter-and Intrafraction Liver Motion During Radiation Therapy in Patients with Obesity or Ascites." *International Journal of Radiation Oncology• Biology• Physics* 99, no. 2 (2017): E145.
13. Zhang, Y., J. J. Meyer, H. Lee, **J. Nasehi Tehrani**, and J. Wang. "Liver CBCT Reconstruction by Prior-Knowledge Guided Motion Modeling and Biomechanical Modeling." *International Journal of Radiation Oncology• Biology• Physics* 99, no. 2 (2017): S95.
14. Zhang, You, **J. Nasehi Tehrani**, and Jing Wang. "A biomechanical modeling guided CBCT estimation technique." *IEEE transactions on medical imaging* 36, no. 2 (2017): 641-652.
15. You Zhang, Michael R. Folkert, Bin Li, Xiaokun Huang, Jeffrey J. Meyer, Tsui Cheung Chiu, Pam Lee, **J. Nasehi Tehrani**, Jing Cai, David Parsons, Xun Jia, Jing Wang, "4D liver tumor localization using cone-beam projections and a biomechanical model." *Radiotherapy and Oncology*, 2018.
16. Zhang, You, Michael R. Folkert, Xiaokun Huang, Lei Ren, Jeffrey Meyer, **J. Nasehi Tehrani**, Robert Reynolds, and Jing Wang. "Enhancing liver tumor localization accuracy by prior-knowledge-guided motion modeling and a biomechanical model." *Quantitative imaging in medicine and surgery* 9, no. 7 (2019): 1337.

### **Invited Speech or Poster Presentation (National)**

1. **J. Nasehi Tehrani**, H. Yan, M. Zhu, C. Jin, A. L. McEwan, "Measurement of Retinal Arteriolar Diameters from Auto Scale Phase Congruency with Fuzzy Weighting and L1 Regularization", 34th Annual International Conference of the IEEE EMBC, San Diego, pp.1434-1437, 2012.
2. CY Huang\*, **J. Nasehi Tehrani**, J Ng, P Keall "Quantifying Intrafractional Prostate Rotation From Cone-Beam Computed Tomography with Radiopaque Markers," *Medical Physics* 40 (6), 178-178, 2013.

3. **J. Nasehi Tehrani**, R O'Brien, P Poulsen, P Keall "Real-Time Estimation of Prostate Tumor Rotation and Translation with a KV Imaging System Based On An Iterative Closest Point Algorithm," *Medical Physics* 40 (6), 458-458, 2013.
4. Chen-Yu Huang, **J. Nasehi Tehrani**, Jeremy Booth, Paul Keall, "Towards 6-Degree-Of-Freedom Real-Time Motion Management in Cancer Radiotherapy" *Medical Physics* 41 (6), 120-120, 2014.
5. **J. Nasehi Tehrani**, J Wang, X Guo, Y Yang, "3D Markerless Registration of Lung Based On Coherent Point Drift: Application in Image-Guided Radiotherapy", *Medical Physics* 41 (6), 101-101, 2014.
6. **J. Nasehi Tehrani**, Y Yang, R Werner, W Lu, D Low, X Guo, J Wang "Sensitivity of Tumor Motion Simulation Accuracy to Lung Biomechanical Modeling Approaches and Parameters" *Medical Physics* 42 (6), 3729-3729, 2015.
7. **J. Nasehi Tehrani**, X Guo, J Wang "Mooney-Rivlin Biomechanical Modeling of Lung with Inhomogeneous Material Property" *Medical Physics* 42 (6), 3637-3638, 2015.
8. Zhang, Y., **J. Nasehi Tehrani**, and J. Wang. "MO-AB-BRA-09: Development and Evaluation of a Biomechanical Modeling-Assisted CBCT Reconstruction Technique (Bio-Recon)." *Medical Physics* 43, no. 6Part28: 3692-3692, 2016.
9. B. Neal, **J. Nasehi Tehrani**, J. Siebers "Closing the Quality Management Loop with An Automated Plan Check That Draws From An Incident Reporting System" AAPM 2017 Spring Clinical Meeting, March 2017.
10. H. Nourzadeh **J. Nasehi Tehrani**, M. Ahmed, C. Hui, W. Watkins, J. Siebers "Clinical Adequacy of Auto-Segmented Region of Interest via Plan Robustness Analysis" 60th Annual Meeting & Exhibition of AAPM, Nashville, TN, 2018.
11. **J. Nasehi Tehrani**, C. Hui, B. Libby, A. Goode, P. Collins, J. Siebers "Quantifying the Material Differentiation Ability of Virtual Monochromatic Images Synthesized From Dual-Energy CT (DECT) Images (Phantom Study)" 60th Annual Meeting & Exhibition of AAPM, Nashville, TN, 2018.
12. **J. Nasehi Tehrani**, C Kalavagunta, G Lasio, S Chen, B Yi "Motion of Electronic Portal Imaging Devices and Clinical Implications for Multi-Leaf Collimator Quality Assurance" AAPM Annual meeting, Vancouver, British Columbia, 2020
13. **J. Nasehi Tehrani**, G Lasio, B Libby, N Lamichhane, K Jiang, M MacFarlane, M Guerrero" A Nomogram to Estimate Required Ci-S in Prostate HDR Brachytherapy" AAPM Annual Meeting , Virtual 63rd, 2021
14. M J. MacFarlane, C Kalavagunta, A. Gopal, H. Xu, **J. Nasehi Tehrani**, J. Zhou and S. Chen, Clinical Robustness of Multi-Isocentric Volumetric Modulated Arc Based Craniospinal Irradiation, AAPM Annual Meeting, 65<sup>th</sup> , July 23-27, Houston, TX, 2023
15. M. Zolghadr, D. Naghavi Dizaji, E. Etemadjoo, **J. Nasehi Tehrani** and E. Zarifi, Developing an Accurate and Cost-Effective Dosimeter for Developing Countries AAPM Annual Meeting, 65<sup>th</sup> , July 23-27, Houston, TX, 2023
16. H. Zhang, B. Zhang, G. Lasio, S. Chen, and **J. Nasehi Tehrani**, Evaluation of Structural Similarity (SSIM) Index for the Weekly Quality Assurance of Multi-Leaf Collimator (MLC) AAPM Annual Meeting, 65<sup>th</sup> , July 23-27, Houston, TX, 2023

## **Invited Speech or Poster Presentation (International)**

1. **J. Nasehi-Tehrani**, N. Riyahi, A. Ahmadian, “Computer Aided Segmentation of Suspicious Clustered Microcalcifications in Digital Mammography: Using Fuzzy Logic on Wavelet Coefficients,” 6th International Workshop on Digital Mammography, IWDM 2002, June 22-25, 2002, Bremen-Germany, pp. 1-4.
2. N. Riyahi-Alam, A. Ahmadian; **J. Nasehi Tehrani**; M. Guiti; M. A. Oghabian; A. Deldari, (2004), “Segmentation of Suspicious Clustered Microcalcifications on Digital Mammograms: using Fuzzy Logic and Wavelet Coefficients,” International Conference on Signal Processing, IEEE, ICSP04, 2004, China pp.2226-2228.
3. G. Gargiulo, P. Bifulco, A. McEwan, **J. Nasehi Tehrani**, R.A. Calvo, M. Romano, M. Ruffo, R. Shephard, M. Cesarelli, C. Jin, A. Mohamed, A. van Schaik. (2010) “Dry Electrode Bio-potential recordings,” 32nd Annual International Conference of the IEEE EMBC 2010, Buenos Aires, Argentina, Aug. 31 to Sep. 4, pp. 6493-6496.
4. **J. Nasehi Tehrani**, C. Jin; A. McEwan; A. Van Schaik (2010), “A Comparison between Compressed Sensing Algorithms in Electrical Impedance Tomography,” 32nd Annual International Conference of the IEEE EMBC 2010, 31 August-September 4, 2010, Buenos Aires, Argentina, pp. 3109-3112.
5. **J. Nasehi Tehrani**, A. McEwan, (2010), “A comparison between new L1 minimization algorithms in Electrical Impedance Tomography using the Pareto Curve”, 17th Iranian Conference on Biomedical Engineering, (ICBME2010), 3-4 November 2010, pp. 1-4.
6. **J. Nasehi Tehrani**, A. Thiagalingam, C. Jin, A. van Schaik, W. Chik, M.A. Barry, A. McEwan, 2011, “Feasibility of using internal electrodes to improve the accuracy Cardiac Electrical Impedance Tomography,” 12th International Conference on Electrical Impedance Tomography, Bath, UK, 4-6 May 2011.
7. **J. Nasehi Tehrani**, C Wang, C Jin, AL McEwan, O Gibbs, E Shanehsaz, MA Barry (2011), “Edge enhancement for retinal vasculature caliber evaluation in the prediction of cardiovascular disease,” Biomedical Engineering and Informatics IEEE, (BMEI), 2011, 4th International, Shanghai, China, pp.210-213.
8. **J. Nasehi Tehrani**, Jing Wang (2015), “Mooney-Rivlin Biomechanical Modeling of Lung with Inhomogeneous Material,” 37th Annual International Conference of the IEEE EMBC 2015, Milan Italy, pp.7897-7900.