CURRICULUM VITAE

General Information

Name: Ruijiang Li
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Education/Training

B.Sc. Electrical Engineering, 06/2004
Zhejiang University, Hangzhou, China
Ph.D. Electrical and Computer Engineering, 12/2008
University of Florida, Gainesville, FL

Positions and Employment

Postdoctoral Fellow, 2008 – 2010
Department of Radiation Oncology, University of California San Diego
Instructor, 2011 – Present
Department of Radiation Oncology, Stanford University School of Medicine

Honors and Awards

NIH Pathway to Independence Award (K99/R00), NCI, 2012 – 2017
Annual Meeting Scientific Abstract Award, ASTRO, 2011
Resident Clinical/Basic Science Research Award, ASTRO, 2010
Selected presentation at the John S. Laughlin Science Council Research Symposium, AAPM, 2010
Resident Poster Recognition Award, ASTRO, 2009
Outstanding Academic Achievement Award, University of Florida, 2005 – 2008
Graduate Alumni Fellowship, University of Florida, 2004 – 2008
Advanced Class of Engineering Education, Chu Kechen Honors College, Zhejiang University, 2001 – 2004

Professional Memberships and Activities

Member:

- AAPM, 2009 – present
- ASTRO, 2009 – present

Program Committee Member:

- IEEE ICMLA: special session on Machine Learning Methods in Cancer Diagnosis and Treatment, 2011

Guest Associate Editor:

- Medical Physics, 2011-2012

Reviewer:

- Medical Physics, Physics in Medicine and Biology, International Journal of Radiation Oncology Biology Physics, Radiotherapy and Oncology, IEEE Transactions on Medical Imaging, IEEE Transactions on Biomedical Engineering, International Journal of Biomedical Imaging, Journal of Biomedicine and

Biotechnology, Reports in Medical Imaging, IEEE Signal Processing Letters, Neural Processing Letters, Neurocomputing, IEEE International Conference of Engineering in Medicine and Biology Society, MICCAI, IEEE International Symposium on Neural Networks

Research Support

Title: Real-time volumetric imaging for lung cancer radiotherapy
Funding Source: NIH CA166186
Project Period: 08/02/12 - 07/31/17
Role: Principal Investigator

Publications

Peer-Reviewed Journal Papers

1. K Choi, L Xing, A Koong, **R Li**, First study of on-treatment volumetric imaging during respiratory gated VMAT, *Med. Phys.*, 40(4): 040701, 2013 (Published as a **Letter**)
2. JD Azcona, **R Li**, E Mok, S Hancock, and L Xing. Development and clinical evaluation of automatic fiducial detection for tumor tracking in cine megavoltage images during volumetric modulated arc therapy, *Med. Phys.*, 40(3): 031708, 2013
3. P Mishra, **R Li**, S James, RH Mak, CL Williams, Y Yue, RI Berbeco, JH Lewis. Evaluation of 3D fluoroscopic image generation from a single planar treatment image on patient data with a modified XCAT phantom, *Phys. Med. Biol.*, 58: 841-858, 2013
4. H Gao, **R Li**, Y Lin, and L Xing. 4D cone beam CT via spatiotemporal tensor framelet, *Med. Phys*., 39(11): 6943-6946, 2012 (Published as a **Letter**)
5. **R Li**, E Mok, DT Chang, M Daly, BW Loo, M Diehn, QT Le, A Koong, and L Xing, Intrafraction verification of gated RapidArc using beam-level kilovoltage x-ray images, *Int J Radiat Oncol Biol Phys*, 83(5): e709-e715, 2012
6. C Gu, **R Li**, H Zhang, A Fung, C Torres, SB Jiang, C Li, Accurate respiration measurement using DC-coupled continuous-wave radar sensor for motion-adaptive cancer radiotherapy, *IEEE Trans Biomed Eng*, 59(11): 3117-3123, 2012
7. **R Li**, JH Lewis, RI Berbeco, L Xing, Real-time tumor motion estimation using respiratory surrogate via memory-based learning, *Phys Med Biol*., 57(15):4771-86, 2012 (**Editor's Choice**)
8. H Kim, TS Suh, R Lee, L Xing, **R Li**, Efficient IMRT inverse planning with a new L1-solver: Template for First-Order Conic Solver (TFOCS), *Phys Med Biol*., 57(13):4139-53, 2012
9. H Kim, **R Li**, R Lee, T Goldstein, S Boyd, E Candes, L Xing, Dose optimization with first-order total-variation minimization for dense angularly sampled and sparse intensity modulated radiation therapy (DASSIM-RT), *Med Phys*, 39(7): 4316-4327, 2012
10. H Lee, L Xing, R Davidi, **R Li**, J Qian, and R Lee, Improved compressed sensing-based cone-beam CT reconstruction using adaptive prior image constraints, *Phys Med Biol*., 57(8), 2287–2307, 2012
11. **R Li**, E Mok, B Han, A Koong, L Xing, Evaluation of the geometric accuracy of surrogate-based gated VMAT using intrafraction kilovoltage x-ray images, *Med Phys*, 39(5): 2686-2693, 2012
12. **R Li**, L Xing, Response to "Comment on 'Bridging the gap between IMRT and VMAT: Dense angularly sampled and sparse intensity modulated radiation therapy'" [Med. Phys. 38, 4912-4919 (2011)], *Med. Phys.*, 39(3): 1676, 2012
13. **R Li**, L Xing, Bridging the gap between IMRT and VMAT: dense angularly sampled and sparse intensity modulated radiation therapy (DASSIM-RT), *Med. Phys.*, 38(9): 4912-4919, 2011 (**Editor's Pick and Top 20 most downloaded article**)

14. **R Li**, BP Fahimian, L Xing, A Bayesian approach to real-time 3D tumor localization via monoscopic x-ray imaging during treatment delivery, *Med. Phys.*, 38(7): 4205-4214, 2011
15. **R Li**, JH Lewis, X Jia, T Zhao, W Liu, J Lamb, D Yang, DA Low, SB Jiang, On a PCA-based lung motion model, *Phys Med Biol*. 56(18): 6009-6030, 2011
16. JH Lewis, **R Li**, X Jia, WT Watkins, Y Lou, WY Song, and SB Jiang, Mitigation of motion artifacts in CBCT of lung tumors based on tracked tumor motion during CBCT acquisition, *Phys Med Biol*., 56(17): 5485–5502, 2011
17. X Jia, Y Lou, JH Lewis, **R Li**, X Gu, C Men, Song WY, SB Jiang, GPU-based fast low-dose cone beam CT reconstruction via total variation, *J. X-ray Sci. Technol.* 19(2): 139-154, 2011
18. **R Li**, JH Lewis, X Jia, X Gu, M Folkerts, C Men, WY Song and SB Jiang, 3D tumor localization through real-time volumetric x-ray imaging for lung cancer radiotherapy, *Med. Phys.*, 38(5):2783-2794, 2011
19. TW Watkins, **R Li**, JH Lewis, A Sandhu, T Pawlicki, SB Jiang, WY Song, Patient-specific motion artifacts in 4DCT, *Med. Phys.*, 37(6):2855-2861, 2010
20. **R Li**, X Jia, JH Lewis, X Gu, M Folkerts, C Men and SB Jiang, Single-projection based volumetric image reconstruction and 3D tumor localization in real time for lung cancer radiotherapy, *Med Image Comput Comput Assist Interv.(MICCAI)*, 13(Pt 3):449-56, 2010
21. JH Lewis, **R Li**, WT Watkins, JD Lawson, WP Segars, LI Cerviño, WY Song, and SB Jiang, Markerless lung tumor tracking and trajectory reconstruction using rotational cone-beam projections: a feasibility study, *Phys Med Biol*. 55(9): 2505-2522, 2010
22. X Jia, Y Lou, **R Li**, WY Song, SB Jiang, GPU-based fast cone beam CT reconstruction from undersampled and noisy projection data via total variation, *Med Phys* 37(4):1757-1760, 2010 (Published as a **Letter**)
23. **R. Li**, X Jia, JH Lewis, X Gu, M Folkerts, C Men and SB Jiang, Real-time volumetric image reconstruction and 3D tumor localization based on a single x-ray projection image for lung cancer radiotherapy, *Med. Phys.* 37(6):2822-2826, 2010 (Published as a **Letter**)
24. **R Li**, JH Lewis, LI Cerviño, and SB Jiang, A feasibility study of markerless fluoroscopic gating for lung cancer radiotherapy using 4DCT templates, *Phys. Med. Biol*. 54(20): N489-N500, 2009
25. **R Li**, JH Lewis, LI Cervino, and SB Jiang, 4D CT sorting based on patient internal anatomy, *Phys Med Biol* 54(15): 4821-4833, 2009
26. T Lin, **R Li**, X Tang, JG Dy, and SB Jiang, Markerless gating for lung cancer radiotherapy based on machine learning techniques, *Phys Med Biol* 54(6): 1555-1563, 2009
27. **R Li**, A Keil, JC Principe, Single-trial P300 estimation with a spatiotemporal filtering method. *Journal of Neuroscience Methods*, 177, 488-496, 2009
28. **R Li**, JC Principe, M Bradley, V Ferrari, A spatiotemporal filtering methodology for single-trial ERP component estimation. *IEEE Trans Biomed Eng*, vol. 56(1), 83-92, 2009
29. **R Li**, W Liu, JC Principe, A unifying criterion for instantaneous blind source separation, *Signal Processing*, vol. 87(8), 1872-1881, 2007

Conference Proceedings

1. **R Li**, L Xing, Measurement of real-time 3D prostate motion for image-guided radiation therapy, *Proc. IEEE Conference on Virtual Environments, Human-Computer Interfaces and Measurement Systems*, 2012
2. C Gu, **R Li**, X Yang, C Li, SB Jiang, Radar sensor based accurate tumor tracking for respiratory-gated lung cancer radiotherapy, *Proc. 8th International Workshop on Structural Health Monitoring*, 2011
3. W Cho, JH Park, WG Jung, TS Suh, K Kielar, E Mok, **R Li**, L Xing, Development of a beam source modeling technique for a flattening filter free (FFF) beam, *Proc. IEEE ICMLA*, , HI, USA, 2011
4. **R Li**, BP Fahimian, L Xing, 3D Bayesian tracking with a single imager for real-time image guidance in prostate radiation therapy. *Proc. IEEE ICMLA*, Honolulu HI, USA, 2011

5. **R Li**, L Xing, A kernel method for real-time respiratory tumor motion estimation using external surrogates, *Proc. IEEE ICMLA*, Honolulu, HI, USA, 2011
6. C Gu, **R Li**, C Li, SB Jiang, A multi-radar wireless system for respiratory gating and accurate tumor tracking in lung cancer radiotherapy, *Proc. IEEE EMBC*, 2011
7. C Li, C Gu, **R Li**, SB Jiang, Radar motion sensing for accurate tumor tracking in radiation therapy, *Proc. IEEE Wireless and Microwave Technology (WAMI) Conference*, 2011
8. C Gu, **R Li**, C Li, SB Jiang, Doppler radar respiration measurement for gated lung cancer radiotherapy, *Proc. IEEE Conference on Biomedical Radio and Wireless Technologies*, 91-94, 2010
9. **R Li**, JH Lewis, X Jia, T Zhao, J Lamb, D Yang, DA Low, SB Jiang, PCA-based lung motion model, *Proc. ICCR* 2010
10. X Jia, Y Lou, **R Li**, X Gu, C Men, SB Jiang, Fast GPU-based low-dose cone beam CT reconstruction via total variation, *Proc. ICCR* 2010
11. **R Li**, JH. Lewis, and SB Jiang, Markerless fluoroscopic gating for lung cancer radiotherapy using generalized linear discriminant analysis, *Proc. IEEE ICMLA*, 468-472, 2009
12. X Jia, Y Lou, **R Li**, X Gu, JH Lewis, and SB Jiang, A dynamic CT image reconstruction method by inducing prior information from PCA analysis, *Proc. IEEE ICMLA*, 473-477, 2009
13. **R Li**, JC Principe, M Bradley, V Ferrari, Robust single-trial ERP estimation based on spatiotemporal filtering, *Proc. IEEE EMBS.*, 5206-5209, 2007
14. **R Li**, JC Principe, M Bradley, V Ferrari, Single-trial ERP estimation based on spatiotemporal filtering, *Proc. Neural Engineering Informatics*, Hawaii, USA; 5: 538-541, 2007
15. **R Li**, JC Principe, Blinking artifact removal in cognitive EEG data using ICA, *Proc. IEEE EMBS*, Vancouver, CA, 6273-6278, 2006

Book Chapters

1. **R Li**, P Keall, and L Xing, Linac based image guided intensity modulated radiation therapy, in *Technical Basis of Radiation Therapy - Practical Clinical Applications (5th edition)*, Eds. SH Levitt, JA Purdy, CA Perez, and P. Poortmans, Springer, 2012
2. **R Li**, and SB Jiang, Applications of machine learning in real-time tumor localization, in *Machine Learning in Computer-Aided Diagnosis: Medical Imaging Intelligence and Analysis* (Chapter 20), Ed. K Suzuki, IGI Global, 2012
3. **R Li**, LI Cervino, and SB Jiang, Real-time tumor localization, in *Adaptive Motion Compensation in Radiotherapy* (Chapter 2), Ed. MJ Murphy, CRC Press, 2011

Invited Talk

R Li, Machine learning in real-time tumor localization, AAPM Symposium on Applications of Machine Learning in Radiotherapy, 2010