UNIVERSITY OF PENNSYLVANIA - SCHOOL OF MEDICINE

Curriculum Vitae
(Updated 11/1/2025)

Name: **Yubing Tong**

Office Address: Medical Image Processing Group
Department of Radiology - University of Pennsylvania
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Education:

1995-1999	B. Engg.	Industrial automatic system - Shandong Jianzhu University, China.
1999-2002	M.S.	Pattern recognition & intelligent system -Wuyi University, China.
2002-2006	Ph.D.	Communication & information system - Beihang University, China. PhD dissertation "The research on image quality assessment and H.264 video coding technology"

Appointments:

2018-	Director of Operations & Senior Research Investigator Medical Image Processing Group (MIPG), Department of Radiology, University of Pennsylvania, U.S.A.
2016- 2018	Research Associate Medical Image Processing Group (MIPG), Department of Radiology, University of Pennsylvania, U.S.A.
2011-2016	Postdoctoral research fellow Medical Image Processing Group (MIPG), Department of Radiology, University of Pennsylvania, U.S.A.
2010-2010	Postdoctoral researcher Multimedia Information Modeling and Retrieval Group, Laboratoire d'Informatique de Grenoble (LIG) / Centre National de la Recherche Scientifique, Grenoble (CNRS - The French National Centre for Scientific Research), France.
2009-2009	Postdoctoral researcher Color Imaging Group, Hubert Curien Lab, Université Jean Monnet/Université de Lyon, ST Etienne, France.
2006-2008	Video software engineer, and Project manager Department of multimedia techniques, Arcsoft Inc. Shanghai, China.

Board of advisor: (2018-2024)

Quantitative Radiology Solutions (QRS), LLC ;
Quantaras, LLC

Awards:

2015 UPenn Biomedicine Postdoctoral Program (BPP) Travel Award, University of Pennsylvania
2018 GPU Grant Program award, Nvidia
2020 **Russel A Hibbs best paper award**, 55th Annual Meeting of the Scoliosis Research Society (SRS).
2020 **Best Paper Award**, 14th International Congress on Early Onset Scoliosis (ICEOS).

Mentoring experience (as a Co-supervisor (with Prof. Jayaram K. Udupa at UPenn/MIPG group)):

2020- Ph.D Thesis reviewer
2016- Ten Postdoc in their research and (co-authored) publications
2016- Ten PhD students and six visiting scholars in their research and publications

Project experience:

1. R01CA255748, PIs: Udupa, Jayaram, Stephen Schuster, Drew Torigian,
   Title: Models and methods for automatically measuring disease body-wide and staging disease via FDG-PET/CT in Lymphoma
   Time: 2021-2026
   Role: Investigator, and major software developer on program & algorithm development for the novel disease quantification and optimal biomarker based radiomics approach DLBCL patients

2. R01HL150147, PIs: Udupa, Jayaram, Drew Torigian, Patrick Cahill
   Title: Virtual growing child 5-dimensional functional models for treating respiratory anomalies
   Time: 2020-2025
   Role: Investigator, and major software developer on program & algorithm development for the novel quantitative thoracic dynamic MRI (QdMRI) approach on normal children and TIS patients

3. NIH 5R01 HL130468, PIs: Arens, Raanan, Udupa, Jayaram, Wootton, David
   Title: A computational biomechanical airway model for obese children at risk for OSAS
   Time: 2016-2021
   Role: Investigator, and program & algorithm developer for 4D MR airway segmentation; optimal bio-marks algorithm for characterizing child patients with and without OSAS

4. NIH 1R21HL1244621, PI: Udupa, Jayaram
   Title: Dynamic MRI image analysis for studying thoracic insufficiency syndrome
   Time: 2015 – 2017
   Role: Program & algorithm developer 4D MR image construction; 4D lung segmentation approach

5. NSF STTR #1549509 PIs: Jayaram K Udupa, Joseph Camaratta
   STTR Phase I: Automated object contouring methods and software for head and neck radiotherapy planning
   Time: 1/15/2016-12/31/2016
   Role: Algorithm developer with publications of AAR techniques on upper airway, 4D image segmentation

6. NIH 5R01HL105212 PIs: Raanan Arens and Jayaram K. Udupa
   Title: A structural & functional study of the upper airway in adolescent girls with PCOS
   Time: 2011-2014
   Role: Algorithm developer for image segmentation algorithm development on image processing and segmentation approaches with publication of 4D IRFC for upper airway segmentation

7. Quaero, a pan-European research program for developing multimedia, multilingual indexing and management tools which is co-founded by France and Germany government.
   Time: 2010-2011
   Role: Algorithm developer attending TRECVID at LIG, and designing incremental Multi-Classifier learning algorithm on Grid5000 for Large Scale Image Annotation.

Grants (as PI):

1. Nvidia GPU grant
   PI: Yubing Tong
   Title: Deep learning-based fat segmentation from chest CT images of lung transplant patients. 2018-2019.

2. ITMAT's Pilot Grant program for Maturational Human Biology
   PI: Yubing Tong, Co-PIs: Drew Torigian (UPenn), Robert M. Campbell (CHOP)
   Title: Development of deep-learning-based object segmentation on 4D MRI to understand changes in normal thoracic dynamics during childhood maturation.
   July 1, 2018-June 30, 2021 ($100,000.00).

3. ITMAT's Pilot Grant program for Pilot Grant program for Translational Biomedical Imaging Center
   PI: Yubing Tong, Co-PIs: Drew Torigian (UPenn), Patrick Cahill (CHOP)
   Title: Development of a deep-learning-based automatic 4D MRI construction and segmentation system for studying thoracic insufficiency syndrome (TIS)
   March 1, 2019- February 28, 2022, ($50,000.00).

4. INID – International Network for Image-based Diagnosis, INTPART project 309857
   PIs: Yubing Tong, Faouzi Alaya Cheikh at Norwegian University of Science and Technology (NTNU), Norway
   December 1, 2021 - December 1, 2024, (5,649,000 NOK)

Memberships in Professional and Scientific Societies:

Member, SPIE
Member, Radiological Society of North America (RSNA)
Member, Institute of Electrical and Electronic Engineers (IEEE, **Senior Member**)

Tech Certificate:

NSF-PCI program: Automated Anatomy Recognition (AAR) team
For completing all requirements of the Innovation Corps (I-Corps) Program, The University of Pennsylvania Innovation Site, **National Science Foundation**, Summer 2015.

1) **The project has hatched a company:** Quantitative Radiology Solutions (QRS), LLC. which has received NSF STTR grants: phase I ($200K) and phase II (~$1M).
2) **AAR software** for radiation therapy application (AAR-RT) from QRS has been **approved (with 510(k) clearance from FDA), April 21, 2021**.

Note: Corps program at Penn is supported by Penn Wharton School, Medicine School, Law School and Penn Center of Innovation as well as Ben Franklin Technology Partners of PA and Wharton Entrepreneurship.

Clinical Certificates:

GCP (good clinical practice), ICH GCP guidelines.
HIPAA Privacy training; HIPAA privacy and security education; CITI Research training (CITI protection of human subjects-ORA, CITI Responsible conduct-UNIV)

Editorial Positions:

2014- Guest Editor for International Journal IC-MED, Intelligent Computing in Medical Sciences & Image Processing
2015- Editorial Board of MAYFEB Journal of Electrical and Computer Engineering
2022- Guest editor for Medical Physics; Guest editor for Frontiers in Radiology
2024- Editorial Board of Computerized Medical Imaging and Graphics (CMIG)

Program Committee Member/ Chairman for International Conferences:

Conference general chair: International Workshop on Image Processing 2023

Oversea Liaison Chair for ICIG2021 (the 11th International Conference on Image and Graphics)

Program committee for

SPIE Medical Imaging 2020 (the major conference: Image Processing, 2020-)

International Conference on Computer Vision and Computational Intelligence (2021-)

EUVIP committee member (2023-)

IEEE International Conference on Computer Vision Theory and Applications (2014-)

IEEE International Conference on Systems, Man, and Cybernetics (2019/2018/2017/2014)

IEEE International Conference on Fuzzy Systems (FUZZ-2016)

9th International Forum on Multimedia Image Processing /World Automation Congress 2014

International Conference on Emerging Trends in Engineering & Technology 2012

Reviewer for Grants:

National Science Foundation (United States), SBIR/STTR grant panel meetings (2019-)

Reviewer for Journals:

Artificial Intelligence in Medicine

Medical Image Analysis

IEEE Transactions on Medical Imaging

IEEE Transactions on Image Processing

IEEE Transactions on Signal Processing

IEEE Transactions on Multimedia

IEEE Transactions on Circuits and Systems for Video Technology

IEEE Transactions on Broadcasting

Medical Physics

Magnetic Resonance Imaging

Computer Vision and Image Understanding

Computerized Medical Imaging and Graphics

EURASIP: signal image and video processing

Applied Soft Computing

Journal of Pattern Recognition Research

Autosoft Journal (ISAC Journal)

Computing and Informatics journal

Neural Computing and Applications (NCAA)

Elsevier/ Signal Processing: Image Communication

International Journal of Advanced Robotic Systems

International Journal of Image and Graphics

International Journal of Biomedical Imaging

International Journal of Innovative Computing, Information and Control

Journal of Advanced Computational Intelligence and Intelligent Informatics

Multimedia Tools and Applications

World Wide Web Journal

Magnetic Resonance Materials in Physics, Biology and Medicine

Journal of Healthcare Engineering

"Zeitschrift für Medizinische Physik" (Z MED PHYS), an official organ of the German and Austrian Society of Medical Physic and the Swiss Society of Radiobiology and Medical Physics

Reviewer for Conferences:

International Conference on Computer Vision and Computational Intelligence (CVCI) (2021-)

SPIE Medical Imaging (2020-)

Medical Image Computing and Computer Assisted Interventions (MICCAI 2015-)

IEEE International Conference on Computer Vision Theory and Applications (2014-)

IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC 2013-)

IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2018/2016/2015)

Patents and IP disclosures:

1. Jayaram K. Udupa, **Yubing Tong**, Changjian Sun, Drew A.Torigian et al. Quantitative Dynamic MRI (QdMRI) Analysis and Virtual Growing Child (VGC) 5D Functional Models for treating Respiratory Anomalies, **Granted. US Patent US patent 12,336,839, 2025.**
2. Udupa JK, Agrawal V, **Tong Y**, Torigian DA. Deep learning architecture for analyzing medical images for body region recognition and delineation. **Granted**. US patent 11,995,830 B2, May 28, 2024.
3. Jayaram K. Udupa, Dewey Odhner, **Yubing Tong** and Drew A.Torigian. "An interactive method for standardization and non-uniformity correction of MR image intensities," United States Patent, **No.**: US10043250B2, **Granted**. Date: Aug. 7, 2018.
4. Jayaram K. Udupa, Dewey Odhner, Drew A.Torigian and **Yubing Tong**: "Applications of anatomy recognition in medical tomographic imagery based on fuzzy anatomy models," United States Patent, Patent. No.: US12,223,655 B2, **Granted**. Date: Feb. 11, 2025.
5. Jayaram K. Udupa, Tiange Liu, Drew A. Torigian, Dewey Odhner, **Yubing Tong**, Quantification and Staging Of Body-Wide Tissue Composition And Of Abnormal States On Medical Images Via automatic Anatomy Recognition, **Granted**. US Patent 11,443,433.
6. Jayaram K. Udupa, You Hao, Chao Jin, **Yubing Tong,** Dewey Ohdher, Drew Torigian, Tiange Liu," Natural and artificial intelligence for robust automatic anatomy segmentation", **U.S. Patent Pub.** No.: US 2025/002960 A1, Pub. Date: Jan 23, 2025.
7. S Schuster, **Y Tong**, JK Udupa, DA Torigian, Method of predicting response to chimeric antigen receptor therapy, **US Patent Pub. No.:** WO/2021/163618.
8. Jayaram K. Udupa, Aliasghar Mortazi, **Yubing Tong,** Drew Torigian, Dewey Odhner," Standardization Of Positron Emission Tomography Based Images", **U.S. Patent Application** No. 17175655, Pub. Date: Aug 19, 2021.
9. Jayaram K. Udupa, Dewey Odhner, Drew A.Torigian, **Yubing Tong**, Applications of Automatic Anatomy Recognition In Medical Tomographic Imagery Based On Fuzzy Anatomy Models, **US Patent App. 17/569,920**

10. JK Udupa, T Liu, **Y Tong,** DA Torigian, Deep learning network for the analysis of body tissue composition on body-torso-wide CT images, **US Patent App**. 2023: 17/908,730.

Journal Papers (92):

1. He D, **Tong Y**, Torigian D, Udupa JK. Predicting the Effort Required to Manually Mend Auto-Segmentations, IEEE JBHI, 2025, in press.
2. Akhtara Y, Udupa JK, **Tong Y,** Liu T, Torigian D., Auto-segmentation of thoraco-abdominal organs in pediatric dynamic MRI. Medical Physics, 2025, in press.
3. **Tong Y**, Udupa JK, McDonough JM, Xie L, Wu C, Akhtar Y, Hosseini M, Alnoury M, Shaghaghi S, Gogel S, Biko DM, Mayer OH, Torigian DA, Cahill PJ, Anari JB. Do Rib-Based Anchors Impair Chest Wall Motion in Early Onset Scoliosis? - A Novel Investigation via Dynamic MRI. J Pediatr Orthop. 2025 Jun 4. doi: 10.1097/BPO.0000000000003015. Epub ahead of print. PMID: 40488411
4. Hassani S, **Tong Y**, Lomer NB, Udupa JK, Wu C, McDonough JM, Gogel S, Mayer OH, Biko DM, Cahill PJ, Anari JB, Torigian DA. Comparative analysis of thoracic structure and function using CT and dynamic MRI in pediatric thoracic insufficiency syndrome with and without neuromuscular disease. Spine Deform. 2025 May 6. doi: 10.1007/s43390-025-01095-y. Epub ahead of print. PMID: 40327258.
5. Liu T, Li J, Torigian DA, **Tong Y**, Xiong Q, Zhang K, Udupa JK. Diffusion semantic segmentation model: A generative model for medical image segmentation based on joint distribution. Med Phys. 2025 Jul;52(7):e17928. doi: 10.1002/mp.17928. Epub 2025 Jun 8. PMID: 40483601.
6. Mortazi A, Udupa JK, Hosseini M, **Tong Y**, Torigian DA. Virtual cutaneous area severity index (vCASI): A comprehensive methodology for quantitative skin disease assessment on positron emission tomography images. Eur J Nucl Med Mol Imaging. 2025 Jun 23. doi: 10.1007/s00259-025-07423-8. Epub ahead of print. PMID: 40545498
7. Long M, Alnoury M, Udupa JK, **Tong Y**, Wu C, Poole N, Mannikeri S, Ky B, Feigenberg SJ, Zou JW, O'Reilly S, Torigian DA. Prediction of Radiation Therapy Induced Cardiovascular Toxicity from Pretreatment CT Images in Patients with Thoracic Malignancy via an Optimal Biomarker Approach. Acad Radiol. 2025;32(4):1895-905. doi: 10.1016/j.acra.2025.01.012. PubMed PMID: 39870564; PMCID: PMC11981848.
8. Ewing JN, Gala Z, Voytik M, Broach RB, Udupa JK, Torigian DA, **Tong Y**, Fischer JP. A cross-sectional survey investigating surgeon perceptions of pre-operative risk prediction models incorporating radiomic features. Hernia. 2025;29(1):97. doi: 10.1007/s10029-025-03292-0. PubMed PMID: 39966191.
9. Xie L, Xu Y, Zheng M, Chen Y, Sun M, Archer MA, Mao W, **Tong Y**, Wan Y. An anthropomorphic diagnosis system of pulmonary nodules using weak annotation-based deep learning. Comput Med Imaging Graph. 2024;118:102438. doi: 10.1016/j.compmedimag.2024.102438. PubMed PMID: 39426342; PMCID: PMC11620937.
10. Zhang H, Ge H, Li T, Zhou L, Su S, **Tong Y**. Combining decomposition and graph capsule network for multi-objective vehicle routing optimization. Intelligent Data Analysis. 2024;29(1):116-140. doi:10.3233/IDA-230480.
11. Hao Y, Udupa JK, **Tong Y,** Wu C, McDonough JM, Gogel S, Mayer OH, Alnoury M, Cahill PJ, Anari JB, Torigian DA. Quantifying Normal Diaphragmatic Motion and Shape and their Developmental Changes via Dynamic MRI. CHEST Pulmonary. 2025 Mar 1;3(1):100115.
12. **Tong Y**, Udupa JK, McDonough JM, Wu C, Xie L, Rajapakse CS, Gogel S, Sarkar S, Mayer OH, Anari JB, Torigian DA, Cahill PJ. Characterizing Lung Parenchymal Aeration via Standardized Signal Intensity from Free-breathing 4D Dynamic MRI in Phantoms, Healthy Children, and Pediatric Patients with Thoracic Insufficiency Syndrome. Radiol Cardiothorac Imaging. 2024;6(4):e230262. doi: 10.1148/ryct.230262. PubMed PMID: 39051878; PMCID: PMC11369656.

13. Liu T, Bai Q, Torigian DA, **Tong Y**, Udupa JK. VSmTrans: A hybrid paradigm integrating self-attention and convolution for 3D medical image segmentation. Med Image Anal. 2024;98:103295. doi: 10.1016/j.media.2024.103295. PubMed PMID: 39217673; PMCID: PMC11381179.
14. McCarthy, BE, Feng, R, Torigian, DA, Tong, Y, Fritz, JS, Minhas, JK, Mazurek, JA, Smith, KA, Palevsky, HI, Pugliese, SC, Homer, NZ, Maclean, MR, Udupa, JK & Al-Naamani, N 2024, 'Epicardial Adipose Tissue Is an Independent Risk Factor for Mortality in Pulmonary Arterial Hypertension', Chest Journal. https://doi.org/10.1016/j.chest.2024.11.020
15. Akhtar Y, Udupa JK, **Tong Y**, Wu C, Liu T, Tong L, Hosseini M, Al-Noury M, Chodvadiya M, McDonough JM, Mayer OH, Biko DM, Anari JB, Cahill P, Torigian DA. Auto-segmentation of hemi-diaphragms in free-breathing dynamic MRI of pediatric subjects with thoracic insufficiency syndrome. medRxiv. 2024. doi: 10.1101/2024.09.17.24313704. PubMed PMID: 39371175; PMCID: PMC11451659.
16. He D, Udupa JK, **Tong Y**, Torigian DA. Predicting the effort required to manually mend auto-segmentations. medRxiv. 2024. doi: 10.1101/2024.06.12.24308779. PubMed PMID: 38947045; PMCID: PMC11213037.
17. Akhtar Y, Udupa JK, **Tong Y**, Liu T, Wu C, Kogan R, Al-Noury M, Hosseini M, Tong L, Mannikeri S, Odhner D, McDonough JM, Lott C, Clark A, Cahill PJ, Anari JB, Torigian DA. Auto-segmentation of thoraco-abdominal organs in pediatric dynamic MRI. medRxiv. 2024. doi: 10.1101/2024.05.04.24306582. PubMed PMID: 38766023; PMCID: PMC11100850.
18. Hosseini M, Udupa JK, Hao Y, **Tong Y**, Wu C, Akhtar Y, Al-Noury M, Shaghaghi S, McDonough JM, Biko DM, Gogel S, Mayer OH, Cahill PJ, Torigian DA, Anari JB. Assessment of 3D hemi-diaphragmatic motion via free-breathing dynamic MRI in pediatric thoracic insufficiency syndrome. medRxiv. 2024. doi: 10.1101/2024.05.02.24306551. PubMed PMID: 38746409; PMCID: PMC11092715.
19. Xie L, Udupa JK, **Tong Y**, McDonough JM, Cahill PJ, Anari JB, Torigian DA. Interactive Segmentation of Lung Tissue and Lung Excursion in Thoracic Dynamic MRI Based on Shape-guided Convolutional Neural Networks. medRxiv. 2024. doi: 10.1101/2024.05.03.24306808. PubMed PMID: 38746267; PMCID: PMC11092696.
20. **Tong Y**, Udupa JK, McDonough JM, Xie L, Hao Y, Akhtar Y, Wu C, Rajapakse CS, Gogel S, Mayer OH, Anari JB, Torigian DA, Cahill PJ. Virtual Growing Child (VGC): A general normative comparative system via quantitative dynamic MRI for quantifying pediatric regional respiratory anomalies with application in thoracic insufficiency syndrome (TIS). bioRxiv. 2024. doi: 10.1101/2024.04.28.591554. PubMed PMID: 38746219; PMCID: PMC11092456.
21. **Tong Y,** Udupa JK, McDonough JM, Xie L, Wu C, Akhtar Y, Hosseini M, Alnoury M, Shaghaghi S, Gogel S, Biko DM, Mayer OH, Torigian DA, Cahill PJ, Anari JB. Do Rib-Based Anchors Impair Chest Wall Motion in Early Onset Scoliosis (EOS)? medRxiv. 2024. doi: 10.1101/2024.05.01.24306556. PubMed PMID: 38746195; PMCID: PMC11092725.
22. Hao Y, Udupa JK, **Tong Y**, Wu C, McDonough JM, Gogel S, Mayer OH, Alnoury M, Cahill PJ, Anari JB, Torigian DA. Quantifying Normal Diaphragmatic Motion and Shape and their Developmental Changes via Dynamic MRI. medRxiv. 2024. doi: 10.1101/2024.05.12.24306850. PubMed PMID: 38798322; PMCID: PMC11118591.
23. Dai J, Liu T, Torigian DA, **Tong Y**, Han S, Nie P, Zhang J, Li R, Xie F, Udupa JK. GA-Net: A geographical attention neural network for the segmentation of body torso tissue composition. Med Image Anal. 2023;91:102987. doi: 10.1016/j.media.2023.102987. PubMed PMID: 37837691.
24. **Tong Y**, Udupa JK, Chong E, Winchell N, Sun C, Zou Y, Schuster SJ, Torigian DA. Prediction of lymphoma response to CAR T cells by deep learning-based image analysis. PLoS One. 2023;18(7):e0282573. doi: 10.1371/journal.pone.0282573. PubMed PMID: 37478073; PMCID: PMC10361488.
25. **Tong Y**, Udupa JK, McDonough JM, Wu C, Sun C, Xie L, Lott C, Clark A, Mayer OH, Anari JB, Torigian DA, Cahill PJ. Assessment of Regional Functional Effects of Surgical Treatment in

Thoracic Insufficiency Syndrome via Dynamic Magnetic Resonance Imaging. J Bone Joint Surg Am. 2023;105(1):53-62. doi: 10.2106/JBJS.22.00324. PubMed PMID: 36598475.
26. Mortazi A, Udupa JK, Odhner D, **Tong Y**, Torigian DA. Post-acquisition Standardization of Positron Emission Tomography Images. Res Sq. 2023. doi: 10.21203/rs.3.rs-2447963/v1. PubMed PMID: 36711962; PMCID: PMC9882643 of interest.
27. Shahait M, Usamentiaga R, **Tong Y**, Sandberg A, Lee DI, Udupa JK, Torigian DA. MRI-Based Radiomics Analysis of Levator Ani Muscle for Predicting Urine Incontinence after Robot-Assisted Radical Prostatectomy. Diagnostics (Basel). 2023;13(18). doi: 10.3390/diagnostics13182913. PubMed PMID: 37761280; PMCID: PMC10528635.
28. Shahait M, Usamentiaga R, **Tong Y**, Sandberg A, Lee DI, Udupa JK, Torigian DA. Periprostatic Adipose Tissue MRI Radiomics-Derived Features Associated with Clinically Significant Prostate Cancer. J Endourol. 2023. doi: 10.1089/end.2023.0215. PubMed PMID: 37597206.
29. Anderson MR, Diamond J, Shashaty M, Singer JP, **Tong Y,** Udupa J, Torigian DA, Palmer S, Lederer DJ, Christie JD, Al-Naamani N. Accuracy and Reproducibility of Automated Measurement of Body Composition: A Lung Transplant Body Composition Cohort Study. Ann Am Thorac Soc. 2023;20(9):1363-6. doi: 10.1513/AnnalsATS.202301-061RL. PubMed PMID: 37115555; PMCID: PMC10502884.
30. Dai J, Liu T, Torigian DA, **Tong Y**, Han S, Nie P, Zhang J, Li R, Xie F, Udupa JK. GA-Net: A geographical attention neural network for the segmentation of body torso tissue composition. Med Image Anal. 2023;91:102987. doi: 10.1016/j.media.2023.102987. PubMed PMID: 37837691.
31. McAuliffe PB, Desai AA, Talwar AA, Broach RB, Hsu JY, Serletti JM, Liu T, **Tong Y**, Udupa JK, Torigian DA, Fischer JP. Preoperative Computed Tomography Morphological Features Indicative of Incisional Hernia Formation After Abdominal Surgery. Ann Surg. 2022;276(4):616-25. doi: 10.1097/SLA.0000000000005583. PubMed PMID: 35837959.
32. Jin C, Udupa JK, Zhao L, **Tong Y**, Odhner D, Pednekar G, Nag S, Lewis S, Poole N, Mannikeri S. Object recognition in medical images via anatomy-guided deep learning. Medical Image Analysis. 2022;81:102527.
33. Udupa JK, Liu TG, Jin C, Zhao LM, Odhner D, **Tong Y**, Agrawal V,et al. Combining natural and artificial intelligence for 1 robust automatic anatomy segmentation: Application in neck and thorax auto-contouring, Medical Physics, 2022.
34. J Yang, H Ge, J Yang, **Y Tong,** S Su, Online pedestrian multiple-object tracking with prediction refinement and track classification, Neural Processing Letters 2022: 54 (6), 4893-4919.
35. H Zhang, H Ge, J Yang, S Su, **Y Tong**. Combining affinity propagation with differential evolution for three-echelon logistics distribution optimization, Applied Soft Computing , 2022, 131, 109787
36. Xie, L, Udupa, JK, **Tong, Y**, et al. Automatic upper airway segmentation in static and dynamic MRI via anatomy-guided convolutional neural networks. Med. Phys. 2021; 1–19. https://doi.org/10.1002/mp.15345
37. Li, J, Udupa, JK, Odhner, D, **Tong, Y**, Torigian, DA. SOMA: Subject-, object-, and modality-adapted precision atlas approach for automatic anatomy recognition and delineation in medical images. Med Phys. 2021; 00 1– 20. https://doi.org/10.1002/mp.15308
38. You Hao, P Hu, S Li, Jayaram K. Udupa, **Yubing Tong,** H Li. Gradient-Aligned Convolution Neural Network, Pattern Recognition, 2021 (in press).
39. *Sun CJ, Udupa JK, ***Tong YB**, Torigian D, Cahill Patrick, A minimally interactive method for labeling respiratory phases in free-breathing thoracic dynamic MRI for constructing 4D images, IEEE TBME, 2021 (*Co-first authors, in press).
40. Jieyu Li, Jayaram K. Udupa, **Yubing Tong,** Lisheng Wang, Drew A. Torigian. Segmentation Evaluation with Sparse Ground Truth Data: Simulating True Segmentations as Perfect/Imperfect as Those Generated by Humans. Medical Image Analysis, 2021 (in press).

41. You Hao, Jayaram K. Udupa, **Yubing Tong,** Drew A. Torigian. OFx: A method of 4D image construction from free-breathing non-gated MRI slice acquisitions of the thorax via optical flux. Medical Image Analysis, 2021 (in press).
42. Kok Choy, Sanghun Sin, **Yubing Tong**, Jayaram Udupa, Dirk Luchtenburg, Mark Wagshul, Raanan Arens, and David Wootton. Upper Airway Effective Compliance during Wakefulness and Sleep in Obese Adolescents studied via 2-Dimensional Dynamic MRI and Semi-automated Image Segmentation. JAPPL 2021 (in press).
43. Xu G, Cao H, Udupa JK, **Tong Y**, Torigian DA. DiSegNet: A Deep Dilated Convolutional Encoder-Decoder Architecture for Lymph Node Segmentation on PET/CT images, CMIG 88 (2021) 10185, 2021.
44. **Tong Y**, Udupa JK, McDonough JM, Wu C, Sun C, Qiu C, Lott C, Galagedera N, Anari JB, Mayer OH, Torigian DA, Cahill PJ. Thoracic quantitative dynamic MRI to understand developmental changes in normal ventilatory dynamics. Chest. 2020. doi: 10.1016/j.chest.2020.07.066. PubMed PMID: 32768456.
45. Agrawal V, Udupa JK, **Tong Y**, Torigian DA. BRR-Net: A Tandem Architectural CNN-RNN for Automatic Body Region Localization in CT Images, Medical Physics, https://doi.org/10.1002/mp.14439.
46. Al-Naamani N, Pan HM, Anderson MR, Torigian DA, **Tong Y**, Oyster M, Porteous MK, Palmer S, Arcasoy SM, Diamond JM, Udupa JK, Christie JD, Lederer DJ, Kawut SM. Thoracic Visceral Adipose Tissue Area and Pulmonary Hypertension in Lung Transplant Candidates: The Lung Transplant Body Composition Study. Ann Am Thorac Soc. 2020. doi: 10.1513/AnnalsATS.202003-247OC. PubMed PMID: 32530703.
47. Li J, Udupa JK, **Tong Y**, Wang L, Torigian DA. LinSEM: Linearizing segmentation evaluation metrics for medical images. Med Image Anal. 2020;60:101601. doi: 10.1016/j.media.2019.101601. PubMed PMID: 31811980; PMCID: PMC6980787.
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54. Changjian Sun, Jayaram K Udupa, **Yubing Tong**, Drew A Torigian. A machine learning algorithm for detecting abnormal respiratory cycles in thoracic dynamic MR image acquisitions, SPIE 2019 Medical Imaging, accepted (Co-mentor).
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56. **Yubing Tong**, Chuang Wang, Jayaram K. Udupa, Caiyun Wu, Gargi Pednekar, Michaela D. Restivo,David J. Lederer, Jason D. Christie, Drew A. Torigian,Quantitative analysis of adipose tissue on chest CT to predict primary graft dysfunction in lung transplant recipients: a novel optimal biomarker approach, SPIE 2018, Medical Imaging (Accepted).
57. **Yubing Tong**, Jayaram K. Udupa, E. Paul Wileyto, Caiyun Wu, Joseph M. McDonough, Anthony Capraro, Oscar H. Mayer, Drew A. Torigian, Robert M. Campbell Jr., Quantitative dynamic MRI (QdMRI) volumetric analysis of pediatric patients with thoracic insufficiency syndrome, SPIE 2018, Medical Imaging (Accepted, **oral presentation**).
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59. Fengxia Yan, Jayaram K. Udupa, **Yubing Tong**, et al. Automatic anatomy recognition using neural network learning of object relationships via virtual landmarks, SPIE 2018, Medical Imaging (Accepted).
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66. **Y.B. Tong**, J. K. Udupa, C.Y. Wu, D.A. Torigian. TIS segmentation Interactive iterative relative fuzzy connectedness lung segmentation on thoracic 4D dynamic MR images. SPIE 2017, Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging, 10137, 1013721.
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69. P.R. Bai, J.K. Udupa, **Y.B. Tong**, D.A.Torgian. Automatic thoracic body region localization. SPIE Medical Imaging 2017: Computer-Aided Diagnosis 10134, 101343X.
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Keynote & Abstract (14):

1. **Y Tong**. An invited talk, "AI Empowered Dynamic MRI with Its Applications in Thoracic Insufficiency Syndrome (TIS)", ICDIP2024, May 26, 2024, Haikou, China.
2. Mahdie Hosseini, Jayaram K Udupa, **Yubing Tong**, Drew A. Torigian et al. Assessment of 3D Hemi-Diaphragmatic Motion via Free-Breathing Dynamic MRI in Pediatric Thoracic Insufficiency Syndrome, RSNA2023 Trainee Research Prize (**Y Tong** as the co-mentor).
3. **Y Tong**. QdMRI and AI with their applications in TIS, **Keynote for PSRS**, Session Four – Artificial Intelligence and Machine Learning in Spine Research, 2023 Philadelphia Spine Research Society (PSRS) Symposium. Friday, November 3rd, 2023, At Drexel University, Philadelphia.
4. **Tong, Y.,** Udupa, J.K., Odhner, D., Liu, T., Jin, C., Taunk, N.K., Pigrish, V., Owens, S., Camaratta, J., Svatos, M. and Torigian, D.A., 2023. A Hybrid Intelligence (HI) System for Segmenting Rectoprostatic Spacer Gel and Key OARs on CT Images for Prostate Cancer Radiation Therapy Planning. International Journal of Radiation Oncology, Biology, Physics, 117(2), p.e727.
5. D Wootton, KR Choy, S Sin, **Y Tong**, JK Udupa, ME Wagshul, R Arens. Airway Effective Compliance Measurement by Image-Based CFD During Hypopnea, Recovery, and Normal Breaths. American Thoracic Society. A4708-A4708. 2021, A4708-A4708.
6. **Yubing Tong, PhD,** Patrick J. Cahill, MD, Jayaram K. Udupa, PhD; Joseph M. McDonough, MS; Caiyun Wu, MS; Catherine Qiu, MS; Carina Lott, MS; Nirupa Galagedera, BA; Jason B. Anari, MD; Drew A. Torigian, MA. Rib-based Anchors Do Not Impair Chest Wall Motion in Early Onset Scoliosis.
   Best paper award, ICEOS virtual meeting on November 14, 2020.
7. **Yubing Tong, PhD**; Jayaram K. Udupa, PhD; Joseph M. McDonough, MS; Caiyun Wu, MS; Catherine Qiu, MS; Carina Lott, MS; Nirupa Galagedera, BA; Jason B. Anari, MD; Drew A. Torigian, MA; Patrick J. Cahill, MD, A Novel Imaging Study to Quantify Respiratory Function in Early Onset Scoliosis-Introducing Quantitative Dynamic Magnetic Resonance Imaging (QdMRI). **Russel A Hibbs Best Basic Science paper** in Scoliosis Research Society (SRS) 55th Annual Meeting online, Sep. 9 - Sep. 13, 2020.

8. Pulmonary Hypertension (PH) and Thoracic Cage Function in Patients with Early Onset Scoliosis: Assessment with Quantitative Dynamic Magnetic Resonance Imaging (QdMRI) **Yubing Tong, PhD**; Jayaram K. Udupa, PhD; Joseph M. McDonough, MS; Caiyun Wu, MS; Catherine Qiu, MS; Carina Lott, MS; Nirupa Galagedera, BA; Catherine M. Avitabile, MD; Jason B. Anari, MD; Drew A. Torigian, MA; Patrick J. Cahill, MD, Scoliosis Research Society (SRS) 55th Annual Meeting online, Sep. 9 - Sep. 13, 2020.
9. **Tong Y**, Uduap JK, Torigian DA, Cahill PJ, Quantitative Dynamic Thoracic MRI (QdMRI) on Normal Children and Pediatric Patients with Thoracic Insufficiency Syndrome (TIS): Quantitative Evaluation of Vertical Expandable Prosthetic Titanium Rib (VEPTR)-based Surgery, RSNA, 12/2/19.
10. H. Pan, M. Anderson, J. Diamond, S. Palmer, M. Oyster, D. Torigian, M. Porteous, S. Arcasoy, **Y. Tong**, J. Udupa, J. Christie, S. M. Kawut, D. Lederer, N. Al-Naamani. Subcutaneous adipose tissue is associated with presence of pulmonary hypertension in advanced lung disease. American Thoracic Society International Conference, May 2019.
11. Jayaram K. Udupa, Gargi V. Pednekar, David J. McLaughlin, Xingyu Wu, Dewey Odhner, **Yubing Tong**, Charles B. Simone II, Joseph Camaratta, Drew A. Torigian. Evaluation of segmentation methods as a function of the quality of input images. AAPM 2017 Annual meeting, 2017.
12. Xingyu Wu, Jayaram K Udupa, **Yubing Tong**, Drew A. Torigian. ISTRA e-Rekha: A high-performance software system for auto contouring head and neck anatomy in adaptive radiation therapy. ASTRO's 59th Annual Meeting, 2017.
13. G. K. Sharma, G. S. Ahuja, D. Odhner**, Y. Tong**, M. T. Wiedmann, J. Jing, K. Huoh, N. Pham, Z. Chen, J. K. Udupa, B. J. Wong. A Novel image analysis approach to fourier-domain optical coherence tomography of the neonatal airway to quantify early structure and histopathological mucosal changes associated with neonatal subglottic stenosis: relative "fuzzy" connectedness, ASPO 2015.
14. Shobhit Sharma, J. K. Udupa, **Y. Tong,** D. A Torigian. "Effect of MRI intensity standardization on liver tissue characterization: a comparison between normal and cirrhotic livers," RSNA 2014.

Recognitions

1. Recognition in the AI community: We published a method and an AI model called VSmTrans for segmenting objects body wide in tomographic images during the previous reporting period: Liu T, Bai Q, Drew A. Torigian DA, **Tong Y**, Udupa JK. VSmTrans: A Hybrid Paradigm Integrating Self-attention and Convolution for 3D Medical Image Segmentation, Medical Image Analysis, 98, 103295, 2024. The publicly shared model for VSmTrans overwhelmingly topped the rank list in a recent large-scale independent external benchmarking, which compared 20 different competitive methods (Bassi PRAS, Zhou Z, et al. Touchstone Benchmark: Are We on the Right Way for Evaluating AI Algorithms for Medical Segmentation? 2024/11/06. doi: 10.48550/arXiv.2411.03670) using ~9K training CT scans, and ~5K test scans. VSmTrans achieved an overall Dice accuracy of 89.8% on 25 objects, while the closest 2nd rank method could segment only 9 objects yielding a Dice accuracy of 87.4%.

2. **Tong Y**, Udupa JK, McDonough JM, Wu C, Qiu C, Lott, C, Galagedera N, Anari JB, Torigian DA, Patrick J. Cahill PJ. A Novel Imaging Study to Quantify Respiratory Function in Early Onset Scoliosis-Introducing Quantitative Dynamic Magnetic Resonance Imaging (QdMRI). Russel A Hibbs best science paper award in Scoliosis Research Society (SRS) 55th Annual Meeting, online, Sep. 9 - Sep. 13, 2020.
3. **Tong Y**, Udupa JK, McDonough JM, Wu C, Qiu C, Lott, C, Galagedera N, Anari JB, Torigian DA, Patrick J. Cahill PJ. 3. Rib-based Anchors do not Impair Chest Wall Motion in Early Onset Scoliosis. Best science paper award in 14th International Congress on Early Onset Scoliosis (2020 ICEOS Virtual Meeting), November 14, 2020.
4. What's New in Pediatric Orthopaedics 2024. An editorial published in Journal of Bone and Joint Surgery, February 19, 2024, under Ortho Buzz for Surgeons by Hardesty CK. Our QdMRI work(**Tong Y** et al. JBJS, 2023;105(1):53-62) was cited as one of the 5 most compelling studies published in general and subspecialty journals between October 2022 and September 2023. Available from: https://orthobuzz.jbjs.org/2024/02/19/whats-new-in-pediatric-orthopaedics-2024/
5. Hosseini M, Udupa JK, Hao Y, **Tong Y**, Akhtar Y, Shaghaghi S, Al-Noury M, Wu C, McDonough JM, Cahill PJ, Anari JB, Torigian DA. Assessment of 3D hemi-diaphragmatic motion via free-breathing dynamic MRI in pediatric thoracic insufficiency syndrome. Annual Conference and Exhibition of the Radiological Society of North America, 2023, Trainee Research Prize.
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