

RICHARD CASTILLO, PhD, DABR

ASSISTANT PROFESSOR | PATIENT CARE
DEPARTMENT OF RADIATION ONCOLOGY
WINSHIP CANCER INSTITUTE | EMORY UNIVERSITY
1365 CLIFTON ROAD NE
ATLANTA, GA 30322

PHONE: +1.404.778.7339
EMAIL: richard.castillo@emory.edu
URL: <http://www.DIR-lab.com/rcastillo.html>

EDUCATION

2007 - 2011: THE UNIVERSITY OF TEXAS GRADUATE SCHOOL OF BIOMEDICAL SCIENCES - MEDICAL PHYSICS
Doctor of Philosophy
Advisor: Thomas Guerrero, MD, PhD

2004 - 2007: THE UNIVERSITY OF TEXAS GRADUATE SCHOOL OF BIOMEDICAL SCIENCES - MEDICAL PHYSICS
Master of Science
Advisor: Thomas Guerrero, MD, PhD

2000 - 2004: TRINITY UNIVERSITY - SAN ANTONIO, TX
Bachelor of Science
Major 1: Physics. Major 2: Mathematics

POST-GRADUATE EDUCATION

2011 - 2012: POSTDOCTORAL FELLOW
Division of Radiation Oncology
The University of Texas MD Anderson Cancer Center

ACADEMIC APPOINTMENTS

2018 - Present: ASSISTANT PROFESSOR
Department of Radiation Oncology - Patient Care
Winship Cancer Institute, Emory University, Atlanta, GA

2014 - 2018: ASSISTANT PROFESSOR
Department of Radiation Oncology - Patient Care
The University of Texas Medical Branch, Galveston, TX

2012 - 2014: INSTRUCTOR
Department of Radiation Physics - Patient Care
The University of Texas MD Anderson Cancer Center, Houston, TX

CERTIFICATIONS & LICENSURE

2016: AMERICAN BOARD OF RADIOLOGY
Therapeutic Medical Physics

2016 - 2018: TEXAS BOARD OF LICENSURE FOR PROFESSIONAL MEDICAL PHYSICISTS
Therapeutic Radiological Physics
FMP02000022

EDUCATIONAL ACTIVITIES AND SERVICE

2019 - Present	PROGRAM DIRECTOR Certificate Program in Medical Physics Emory University School of Medicine
2018 - Present	ASSOCIATE DIRECTOR Medical Physics Residency Program Emory University School of Medicine
2012 - 2014:	ASSOCIATE GRADUATE FACULTY Program Affiliation: Medical Physics The University of Texas Graduate School of Biomedical Sciences, Houston, TX

TEACHING & MENTORSHIP

2018 - Present	LECTURER - RADIOTHERAPY PHYSICS Georgia Tech University Graduate Program in Medical Physics
2017:	STUDENT MENTOR The University of Texas Medical Branch School of Medicine Inter-Professional Scholars Mentorship Program
2016 - 2017:	SMALL GROUP FACILITATOR - PROBLEM-BASED LEARNING The University of Texas Medical Branch School of Medicine <ul style="list-style-type: none">- Cardiovascular & Pulmonary- Gastrointestinal/Nutrition Integrated Medical Course- Dermatology, Hematology and Musculoskeletal
2014:	INVITED LECTURER - IMAGING FOR RADIATION THERAPY The University of Texas MD Anderson Cancer Center School of Health Professions
2014:	SEMINAR CO-ORGANIZER: MEDICAL IMAGING AND RADIATION SCIENCE SEMINAR SERIES https://www.dir-lab.com/radscience2014.html Rice University

EDITORIAL POSITIONS

2017 - Present:	ASSOCIATE SENIOR EDITOR International Journal of Radiation Oncology, Biology, Physics
2016 - Present:	ADHOC ASSOCIATE EDITOR Medical Physics

COMMITTEE MEMBERSHIPS

2019 - Present:	DIVERSITY AND INCLUSION SUBCOMMITTEE (VICE CHAIR) American Association of Physicists in Medicine
2019 - Present	WORKING GROUP ON "ASK THE EXPERT" (MEMBER) American Association of Physicists in Medicine
2019 - Present:	CERTIFICATE PROGRAM IN MEDICAL PHYSICS STEERING COMMITTEE (CHAIR) Emory University School of Medicine

2019 - Present: RADIATION ONCOLOGY WINSHIP AT MIDTOWN ADVISORY COMMITTEE (MEMBER)
Emory University School of Medicine

2018 - Present: FACULTY DEVELOPMENT ADVISORY COMMITTEE (MEMBER)
Emory University School of Medicine

2018 - Present: QUANTITATIVE IMAGING FOR RADIATION THERAPY (QIRT) WORKING GROUP (MEMBER)
National Cancer Institute of the National Institutes of Health

2017 - 2019: DIVERSITY AND INCLUSION SUBCOMMITTEE (MEMBER)
American Association of Physicists in Medicine

2017 - 2018: MEDICAL PHYSICS RESIDENCY TRAINING AND PROMOTION SUBCOMMITTEE (GUEST MEMBER)
American Association of Physicists in Medicine

2015 - 2016: SCIENTIFIC REVIEW GROUP (MEMBER)
ZRG1 PSE-U (90) S - Cancer, Cardiovascular and Sleep Epidemiology Study Section
National Institutes of Health

PROFESSIONAL ACTIVITIES & SERVICE

2019: CO-ORGANIZER AND PANELIST
Artificial Intelligence and Computing in Cancer Imaging
2019 Richard Tapia Celebration of Diversity in Computing
San Diego, CA

2018 - Present: SELF-ASSESSMENT MODULE (SAM) REVIEWER
American Board of Radiology

2017 - Present: PROFFERED ABSTRACT REVIEWER
American Association of Physicists in Medicine Annual Meeting

2011 - Present: ARTICLE REFEREE

- BioMed Central Medical Imaging
- International Journal of Radiation Oncology*Biophysics*Physics
- Journal of Applied Clinical Medical Physics
- Medical Physics
- Medical Image Analysis
- PLOS ONE (Public Library of Science)
- Radiation Oncology
- Signal, Image and Video Processing
- Surgical Oncology
- Technology in Cancer Research & Treatment
- Transactions on Medical Imaging

2010: DIAGNOSTIC IMAGING PHYSICS CLINICAL ROTATION
The University of Texas MD Anderson Cancer Center
Clinical Instruction Supervisor: Charles Willis, PhD

- 2009 - Present: DEVELOPER AND MANAGER: <http://www.DIR-lab.com>
- Publicly available repository of reference image data and image analysis software for quantitative clinical evaluation of deformable image registration
 - 800+ research groups are currently registered, and receive regular research and technical support
 - Registered users represent an international cross-section of academic, commercial, and government interests
- 2007: RADIATION THERAPY PHYSICS CLINICAL ROTATION
The University of Texas MD Anderson Cancer Center
Clinical Instruction Supervisor: Sam Beddar, PhD

ACADEMIC AWARDS & SCHOLARSHIPS

- 2019: COVER ARTICLE - MEDICAL PHYSICS
Robust CT-ventilation from the integral formulation of the Jacobian
46 (5), May 2019
- 2017: COVER ARTICLE - MEDICAL PHYSICS
Incorporation of pre-therapy 18F-FDG uptake data with CT texture features into a radiomics model for radiation pneumonitis diagnosis
44 (7), July 2017
- 2012: AARON BLANCHARD RESEARCH AWARD IN MEDICAL PHYSICS
The University of Texas Graduate School of Biomedical Sciences
- 2011: JOHN R. CUNNINGHAM YOUNG INVESTIGATOR FINALIST
American Association of Physicists in Medicine Annual Meeting, Vancouver, British Columbia
- 2011: TOP 10 CITED PAPER (PAST 2 YEARS) - PHYSICS IN MEDICINE AND BIOLOGY
R Castillo, et al. A framework for evaluation of deformable image registration spatial accuracy using large landmark point sets. Phys. Med. Biol., (54) 2009.
- 2007: COVER ARTICLE - INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS
Reduction of pulmonary compliance found with high-resolution computed tomography in irradiated mice
67 (3), March 2007
- 2004: OUTSTANDING GRADUATING SENIOR AWARD
Trinity University Department of Physics & Astronomy, San Antonio, TX

GRANT AWARDS AND SUPPORT

NIH/NCI: Academic Industrial Partnership	
Award Number:	R01-CA236857
Project Title:	Development of a Novel Lung Function Imaging Modality
Role:	Principal Investigator (MPI)
Funding Institute:	National Cancer Institute
Project Period:	01/01/20 - 12/31/25

Contract Status:	ACTIVE
Winship Invest\$ Pilot Grant	
Award Number:	n/a
Project Title:	A Novel Imaging Framework for Cardiopulmonary Toxicity Evaluation in Thoracic Radiotherapy
Role:	Principal Investigator
Funding Institute:	Winship Cancer Institute of Emory University
Project Period:	09/01/18 - 08/31/20
Contract Status:	ACTIVE
NIH/NCI: Early Clinical Trial	
Award Number:	R01CA200817
Project Title:	Clinical Trial Personalizing Radiation Therapy through a Novel Lung Function Imaging Modality (Vinogradskiy, PI)
Role:	Co-Investigator
Funding Institute:	National Cancer Institute
Project Period:	12/01/15 - 08/31/20
Contract Status:	ACTIVE
NIH/NCI: Research Scientist Development Award	
Award Number:	K01CA181292
Project Title:	A Bayesian Framework for Inter-Modality Deformable Image Registration Evaluation
Role:	Principal Investigator
Funding Institute:	National Cancer Institute
Project Period:	09/12/13 - 08/31/17
Contract Status:	COMPLETE
NIH/NIBIB: Extramural Loan Repayment Award (LRP)	
Award Number:	L30EB015749
Project Title:	A Robust Quality Control Framework for Clinical 4D CT Ventilation Imaging
Role:	Principal Investigator
Funding Institute:	National Institute of Biomedical Imaging and Bioengineering
Initial Project Period:	07/01/12 - 06/30/14
Competitive Renewal:	07/01/14 - 06/30/15

Contract Status:	COMPLETE
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Technology Working Group Seed Funding

Project Title:	Magnetic Resonance Imaging Biomarkers of Radiotherapy-Associated Organ at Risk Injury for Patients enrolled on a Randomized Trial of Photon/Proton Radiotherapy for Oropharyngeal Cancer (Fuller, PI)
Role:	Co-Investigator
Funding Institute:	Center for Radiation Oncology Research
Project Period:	07/01/13 - 06/30/14
Contract Status:	COMPLETE

NIH: Training Grant Sub-Award

Award Number:	NIH-T32CA119930
Project Title:	Medical Physics Training Grant for Image-Guided Therapy Research (Jackson, PI)
Sub-Award Title:	Quantitative Performance of Deformable Image Registration between Thoracic CT Images
Role:	Principal Investigator
Funding Institute:	National Institutes of Health
Project Period:	2008 - 2012
Contract Status:	COMPLETE

PEER-REVIEWED PUBLICATIONS

1. Edward Castillo, Yevgeniy Vinogradskiy, **RICHARD CASTILLO**. Robust HU-based CT-ventilation from an integrated mass conservation formulation. *MEDICAL PHYSICS*, **ARTICLE IN PRESS**.
2. Edward Castillo, **RICHARD CASTILLO**, Yevgeniy Vinogradskiy, Michele Dougherty, David Solis, Nicholas Myziuk, Andrew Thompson, Rudy Guerra, Girish Nair, Thomas Guerrero. Robust CT-ventilation from the integral formulation of the Jacobian. *MEDICAL PHYSICS*, 46 (5): 2115-2125. 2019.
3. Tonghe Wang, Yang Lei, Haipeng Tang, Zhou He, **RICHARD CASTILLO**, Cheng Wang, Dianfu Li, Kristin Higgins, Tian Liu, Walter J. Curran, Weihua Zhou, Xiaofeng Yang. A learning-based automatic segmentation and quantification method on left ventricle in gated myocardial perfusion SPECT imaging: A feasibility study. *JOURNAL OF NUCLEAR CARDIOLOGY*. doi: 10.1007/s12350-019-01594-2. 2019.
4. Yuncheng Zhong, Yevgeniy Vinogradskiy, Liyuan Chen, Nick Myziuk, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Steve Jiang, Jing Wang. Deriving ventilation imaging from 4DCT by deep convolutional neural network. *MEDICAL PHYSICS*, 46 (5): 2323-2329. 2019.
5. Sibotian, Jeffrey M. Switchenko, Richard J. Cassidy, Chase E. Escott, **RICHARD CASTILLO**, Pretesh R. Patel, Walter J. Curran, Kristin A. Higgins. Predictors of pneumonitis-free survival following lung stereotactic radiation therapy. *TRANSLATIONAL LUNG CANCER RESEARCH*, 8 (1): 15-23. 2019.
6. Albert Pinder-Arabbour, Bernard Jones, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Tracey Scheftner, Karyn Goodman, Moyed Miften, Yevgeniy Vinogradskiy. Characterizing spatial lung function for

- esophageal cancer patients undergoing radiotherapy. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 103 (3): 738-746. 2019.
7. Yevgeniy Vinogradskiy, Chad G. Rusthoven, Leah Schubert, Bernard Jones, Austin Faight, **RICHARD CASTILLO**, Edward Castillo, Laurie E. Gaspar, Jennifer Kwak, Timothy Waxweiler, Michele Dougherty, Dexiang Gao, Craig Stevens, Moyed Miften, Brian Kavanagh, Thomas Guerrero, Inga Grills. Interim analysis of a two institution, prospective, clinical trial of 4DCT-ventilation-based functional avoidance radiation therapy. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 102 (4): 1357-1365. 2018.
 8. Yevgeniy Vinogradskiy, Austin Faight, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Moyed Miften, Arthur K. Liu. Using 4DCT-ventilation to characterize lung function changes for pediatric patients getting thoracic radiotherapy. *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*, 19 (5): 407-412. 2018.
 9. Austin Faight, Lindsey Olsen, Leah Schubert, Chad Rusthoven, Edward Castillo, **RICHARD CASTILLO**, Jingjing Zhang, Thomas Guerrero, Moyed Miften, Yevgeniy Vinogradskiy. Functional-guided radiotherapy using knowledge-based planning. *RADIOTHERAPY AND ONCOLOGY*, 129 (3): 494-498. 2018.
 10. David J. Carlson, **RICHARD CASTILLO**, Rojano Kashani, Eric E. Klein. The expanding role of physiologic imaging in radiation oncology. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 102 (4): 694-697. 2018.
 11. Austin Faight, Yuya Miyasaka, Noriyuki Kadoya, **RICHARD CASTILLO**, Edward Castillo, Yevgeniy Vinogradskiy, Tokihiro Yamamoto. Evaluating the toxicity reduction with CT-ventilation functional avoidance radiotherapy. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 99 (2): 325-333. 2017.
 12. Gregory J. Anthony, Alexandra Cunliffe, **RICHARD CASTILLO**, Ngoc Pham, Thomas Guerrero, Samuel G. Armato III, Hania Al-Hallaq. Incorporation of pre-therapy 18F-FDG uptake data with CT texture features into a radiomics model for radiation pneumonitis diagnosis. *MEDICAL PHYSICS*, 44 (7): 3686-3694. 2017.
 13. Austin Faight, Tokihiro Yamamoto, **RICHARD CASTILLO**, Edward Castillo, Jingjing Zhang, Moyed Miften, Yevgeniy Vinogradskiy. Evaluating which dose-function metrics are most critical for functional-guided radiotherapy with CT ventilation imaging. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, (99) 1: 202-209. 2017.
 14. Timothy Waxweiler, Leah Schubert, Quentin Diot, Austin Faight, Kelly Stuhr, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Chad Rusthoven, Laurie Gaspar, Brian Kavanagh, Moyed Miften, Yevgeniy Vinogradskiy. A complete 4DCT-ventilation functional avoidance virtual trial: developing strategies for prospective clinical trials. *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*, 18 (3): 144-152, 2017.
 15. Min Li, Sarah Joy Castillo, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Liang Xiao, Xiao-Lin Zheng. Automated identification and reduction of artifacts in cine four-dimensional computed tomography (4DCT) images using respiratory motion model. *INTERNATIONAL JOURNAL OF COMPUTER-ASSISTED RADIOLOGY AND SURGERY*, DOI 10.1007/s11548-017-1538-0, 2017.
 16. Edward Castillo, **RICHARD CASTILLO**, Yevgeniy Vinogradskiy, Thomas Guerrero. The numerical stability of transformation-based CT ventilation. *INTERNATIONAL JOURNAL OF COMPUTER-ASSISTED RADIOLOGY AND SURGERY*, DOI 10.1007/s11548-016-1509-x, 2017.
 17. Yevgeniy Vinogradskiy, Matthew Jackson, Leah Schubert, Bernard L. Jones, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, John Mitchell, Chad Rusthoven, Moyed M. Miften, Brian D. Kavanagh. Assessing the use of 4DCT-ventilation in pre-operative surgical lung cancer evaluation. *MEDICAL PHYSICS*, 44 (1): 200-208, 2017.
 18. Sager Patel, Arnold Paulino, Danielle Johnston, Lee Wiederhold, **RICHARD CASTILLO**, Rajkumar Venkatramani. Gemcitabine induced radiation recall myositis in a patient with relapsed nasopharyngeal carcinoma. *PRACTICAL RADIATION ONCOLOGY*, 7 (1): e19-e22, 2016.

19. Yevgeniy Vinogradskiy, Leah Schubert, Quentin Diot, Tim Waxweiler, Phillip Woo, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Chad Rusthoven, Laurie Gaspar, Brian Kavanagh, Moyed Miften. Regional lung function profiles of stage I and III lung cancer patients: An evaluation for functional avoidance radiation therapy. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 95 (4): 1273-1280, 2016.
20. Min Li, Zhikang Xiang, Liang Xiao, Edward Castillo, **RICHARD CASTILLO**, Thomas Guerrero. GPU-accelerated block matching algorithm for deformable image registration of lung CT images. *PROCEEDINGS OF IEEE CONFERENCE ON PROGRESS IN INFORMATICS AND COMPUTING*. Nanjing, China. 2015.
21. Douglas Brennen, Leah Schubert, Quentin Diot, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Mary K. Martel, Derek Linderman, Laurie E. Gaspar, Moyed Miften, Brian D. Kavanagh, Yevgeniy Vinogradskiy. Clinical validation of 4DCT-ventilation with pulmonary function test data. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 92 (2): 423-429, 2015.
22. **RICHARD CASTILLO**, Ngoc Pham, Edward Castillo, Samantha Aso-Gonzalez, Sobiya Ansari, Brian Hobbs, Diana Palacio, Heath Skinner, Thomas Guerrero. Pre-radiotherapy FDG PET identifies esophageal cancer patients at high-risk for radiation pneumonitis. *RADIOLOGY*, 275 (3): 822-831, 2015.
23. Alexandra R. Cunliffe, Samuel G. Armato III, **RICHARD CASTILLO**, Ngoc Pham, Thomas Guerrero, Hania Al-Hallaq. Lung texture in serial thoracic CT scans: Correlation of radiomics-based features with radiotherapy dose and radiation pneumonitis development. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 91 (5): 1048-1056, 2015.
24. Sarah Joy Castillo, **RICHARD CASTILLO**, Edward Castillo, Tinsu Pan, Geoffrey Ibbott, Peter Balter, Brian Hobbs, Thomas Guerrero. Evaluation of 4D CT acquisition methods designed to reduce artifacts. *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*, 16 (2): 23-32, 2015.
25. David Fuentes, Jessica Contreras, Justin Yu, R. He, Edward Castillo, **RICHARD CASTILLO**, Thomas Guerrero. Morphometry based measurements of the structural response to whole brain radiation. *INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY*, 10 (4): 393-401, 2015.
26. Abdallah S.R. Mohamed, Manee-Naad Ruangskul, Musaddiq J. Awan, Charles A. Baron, Jayashree Kalpathy-Cramer, **RICHARD CASTILLO**, Edward Castillo, Thomas M. Guerrero, Esengul Kocak-Uzel, Jinzhong Yang, Laurence Court, Michael E. Kantor, G. Brandon Gunn, Rivka R. Colen, Steven J. Frank, Adam S. Garden, David I. Rosenthal, Clifton D. Fuller. Quality assurance assessment of diagnostic and radiation therapy-simulation CT image registration for head and neck radiation therapy: Anatomic region of interest-based comparison of rigid and deformable algorithms. *RADIOLOGY*, 274 (3): 752-763, 2015.
27. **RICHARD CASTILLO**, Ngoc Pham, Sobiya Ansari, Dmitriy Meshkov, Sarah Castillo, Min Li, Adenike Olanrewaju, Brian Hobbs, Edward Castillo, Thomas Guerrero. Pre-radiotherapy FDG PET predicts radiation pneumonitis in lung cancer. *RADIATION ONCOLOGY*, 9 (74), 2014.
28. Edward Castillo, **RICHARD CASTILLO**, David Fuentes, Thomas Guerrero. Computing global minimizers to a constrained B-spline image registration problem from optimal L_1 perturbations to block match data. *MEDICAL PHYSICS*, 41 (4), 2014.
29. Yevgeniy Vinogradskiy, Phillip J. Koo, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Laurie Gaspar, Moyed Miften, Brian Kavanagh. Comparison of 4DCT-Ventilation with nuclear medicine ventilation-perfusion (VQ) imaging: a clinical validation study. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 89 (1): 199-205, 2014.
30. Sarah J. Castillo, **RICHARD CASTILLO**, Peter Balter, Tinsu Pan, Geoffrey Ibbott, Brian Hobbs, Ying Yuan, Thomas Guerrero. Assessment of a quantitative metric for 4D CT artifact evaluation by observer consensus. *JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS*, 15 (3): 190-201, 2014.

31. Suyu Liu, Ying Yuan, **RICHARD CASTILLO**, Thomas Guerrero, Valen Johnson. Evaluation of image registration spatial accuracy using a Bayesian hierarchical model. *BIOMETRICS*, 70 (2): 366-377, 2014.
32. Min Li, Xiao-Lin Zheng, Hong-Yan Luo, **RICHARD CASTILLO**, Shao-Xiang Zhang, Li-Wen Tan, Edward Castillo, Thomas Guerrero. Automated segmentation of brain tissue and white matter in cryosection images from the Chinese Visible Human dataset. *JOURNAL OF MEDICAL AND BIOLOGICAL ENGINEERING*, 34 (2), 2014.
33. Min Li, Edward Castillo, Hong-Yan Luo, Xiao-Lin Zheng, **RICHARD CASTILLO**, Dmitriy Meshkov, Thomas Guerrero. Deformable image registration for temporal subtraction of chest radiographs. *INTERNATIONAL JOURNAL OF COMPUTER ASSISTED RADIOLOGY AND SURGERY*, 10.1007/s11548-013-0947-y, 2013.
34. Min Li, Edward Castillo, Xiao-Lin Zheng, Hong-Yan Luo, **RICHARD CASTILLO**, Yi Wu, Thomas Guerrero. Modeling lung deformation: a combined deformable image registration method with spatially varying Young's modulus estimates. *MEDICAL PHYSICS*, 40 (8), 2013.
35. Yevgeniy Vinogradskiy, **RICHARD CASTILLO**, Edward Castillo, Susan L. Tucker, Zhongxing Liao, Thomas Guerrero, Mary K. Martel. Using 4DCT-based ventilation imaging to correlate lung dose and function with clinical outcomes. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 86: 366-371, 2013.
36. Matthew McCurdy, Derek P. Bergsma, Eric Hyun, Thomas Kim, Enid Choi, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero. The role of lung lobes in radiation pneumonitis and radiation-induced inflammation in the lung: A retrospective study. *JOURNAL OF RADIATION ONCOLOGY*, 2: 203-208, 2013.
37. **RICHARD CASTILLO**, Edward Castillo, David Fuentes, Moiz Ahmad, Abbie M. Wood, Michelle S. Ludwig, Thomas Guerrero. A reference dataset for deformable image registration spatial accuracy evaluation using the COPDgene study archive. *PHYSICS IN MEDICINE & BIOLOGY*, 58: 2861-2877, 2013.
38. Alfredo E. Echeverria, Matthew R. McCurdy, **RICHARD CASTILLO**, Vincent Bernard, Natalia V. Ramos, William R. Buckley, Edward Castillo, Ping Liu, Eric D. Hyun, Thomas Guerrero. Proton therapy radiation pneumonitis local dose-response in esophagus cancer patients. *RADIOTHERAPY AND ONCOLOGY*, 106: 124-129, 2013.
39. Lindsay Mathew, Andrew Wheatley, **RICHARD CASTILLO**, Edward Castillo, George Rodrigues, Thomas Guerrero, Grace Parraga. Hyperpolarized ³He magnetic resonance imaging: Comparison with four-dimensional x-ray computed tomography imaging in lung cancer. *ACADEMIC RADIOLOGY*, 19: 1546-1553, 2012.
40. Edward Castillo, **RICHARD CASTILLO**, Benjamin White, Javier Rojo, Thomas Guerrero. Least median of squares filtering of locally optimal point matches for compressible flow image registration. *PHYSICS IN MEDICINE & BIOLOGY*, 57: 4827-4833, 2012.
41. Matthew McCurdy, **RICHARD CASTILLO**, Josue Martinez, Mohammad N. Al Hallack, Jessica Lichter, Nicolas Zouain, Thomas Guerrero. [18F]-FDG uptake dose response correlates with radiation pneumonitis in lung cancer patients. *RADIOTHERAPY AND ONCOLOGY*, 104: 52-57, 2012.
42. **RICHARD CASTILLO**, Edward Castillo, Matthew R. McCurdy, Daniel R. Gomez, Alec M. Block, Derek Bergsma, Sarah Joy, Thomas Guerrero. Spatial correspondence of 4D CT ventilation and SPECT pulmonary perfusion defects in patients with malignant airway stenosis. *PHYSICS IN MEDICINE & BIOLOGY*, 57: 1855-1871, 2012.
43. Yevgeniy Y. Vinogradskiy, **RICHARD CASTILLO**, Edward Castillo, Adam Chandler, Mary K. Martel, Thomas Guerrero. Use of weekly 4DCT-based ventilation maps to quantify changes in lung function for patients undergoing radiation therapy. *MEDICAL PHYSICS*, 39: 289-298, 2012.
44. **RICHARD CASTILLO**, Edward Castillo, Josue Martinez, Thomas Guerrero. Ventilation from four-dimensional computed tomography: Density versus Jacobian methods. *PHYSICS IN MEDICINE & BIOLOGY*, 55: 4661-4685, 2010.
45. Xuejun Gu, Hubert Pan, Yun Liang, **RICHARD CASTILLO**, Deshan Yang, Dongju Choi, Edward Castillo, Amitava Majumdar, Thomas Guerrero, Steve B. Jiang. Implementation and evaluation of various demons deformable image registration algorithms on GPU. *PHYSICS IN MEDICINE & BIOLOGY*, 55: 207-219, 2010.

46. Edward Castillo, **RICHARD CASTILLO**, Josue Martinez, Maithili Shenoy, Thomas Guerrero. Four dimensional deformable image registration using trajectory modeling. *PHYSICS IN MEDICINE AND BIOLOGY*, 55: 305-327, 2010.
47. Edward Castillo, **RICHARD CASTILLO**, Yin Zhang, Thomas Guerrero. Compressible image registration for thoracic computed tomography images. *JOURNAL OF MEDICAL AND BIOLOGICAL ENGINEERING*, 29: 222-233, 2009.
48. **RICHARD CASTILLO**, Edward Castillo, Rudy Guerra, Valen Johnson, Travis McPhail, Amit K. Garg, Thomas Guerrero. A framework for evaluation of deformable image registration spatial accuracy using large landmark point sets. *PHYSICS IN MEDICINE AND BIOLOGY*, 54: 1849-1870, 2009.
49. Thomas Guerrero, **RICHARD CASTILLO**, Josue Noyola-Martinez, Mylin Torres, Xinhui Zhou, Rudy Guerra, Dianna Cody, Ritsuko Komaki, Elizabeth Travis. Reduction of pulmonary compliance found with high-resolution computed tomography in irradiated mice. *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY*BIOLOGY*PHYSICS*, 67: 879-887, 2007.
50. Thomas Guerrero, **RICHARD CASTILLO**, Kevin Sanders, Roger Price, Ritsuko Komaki, Dianna Cody. Novel method to calculate pulmonary compliance images in rodents from computed tomography acquired at constant pressures. *PHYSICS IN MEDICINE AND BIOLOGY*, 51: 1101-1112, 2006.
51. Tinsu Pan, Osama Mawlawi, Sadek A. Nehmeh, Yusuf E. Erdi, Dershan Luo, Hui H. Liu, **RICHARD CASTILLO**, Radhe Mohan, Zhongxing Liao, H. A. Macapinlac. Attenuation correction of PET images with respiration-averaged CT images in PET/CT. *THE JOURNAL OF NUCLEAR MEDICINE*, 46: 1481-1487, 2005.

INVITED LECTURES

- . The University of Texas Southwestern: An Image Processing Approach to Reducing Lung Toxicity toward Improved Outcomes in Thoracic Radiotherapy, 2016.
- . London Regional Cancer Center, Thoracic Rounds: Numerical Methods for Computing Ventilation from Thoracic CT, September 2010.
- . The University of California at San Diego, Pulmonology Group Seminar: Quantifying Regional Ventilation using Computed Tomography: Applications in Diagnostic Imaging and Thoracic Radiotherapy, June 2010.
- . The University of California at San Diego, Department of Radiation Physics: Evaluation of Deformable Image Registration for Improved 4D CT-Derived Ventilation Image Generation, June 2009.
- . The University of Texas MD Anderson Cancer Center, Department of Radiation Physics: Performance Evaluation of Deformable Image Registration, January 2009.

CONFERENCE ABSTRACTS & PRESENTATIONS

1. Edward Castillo, Yevgeniy Vinogradskiy, **RICHARD CASTILLO**. American Association of Physicists in Medicine (AAPM): Annual Meeting, San Antonio, TX. An Integrated Mass Conservation Formulation for Robust Intensity-Based Computed Tomography (CT) Ventilation. July 2019.
2. Edward Castillo, **RICHARD CASTILLO**, Yevgeniy Vinogradskiy, David Solis, Andrew Thompson, Thomas Guerrero. American Association of Physicists in Medicine (AAPM): Annual Meeting, Nashville, TN. Cone Beam CT-Ventilation from Mass Conserving Point Cloud Density Functions. August 2018.
3. Yuncheng Zhong, Yevgeniy Vinogradskiy, Liyuan Chen, Nicholas Myziuk, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Steve Jiang, Jing Wang. American Association of Physicists in Medicine (AAPM): Annual Meeting, Nashville, TN. Deriving Ventilation Imaging from 4DCT by Deep Convolutional Neural Network. August 2018.
4. Abolfazl Pinder-Arabpour, Bernard Jones, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Karyn Goodman, Tracey Schefter, Jennifer Kwak, Moyed Miften, Yevgeniy Vinogradskiy. American Association of

- Physicists in Medicine (AAPM): Annual Meeting, Nashville, TN. Characterizing Spatial Lung Function for Esophageal Cancer Patients. August 2018.
5. Edward Castillo, J Zhang, Yevgeniy Vinogradskiy, **RICHARD CASTILLO**, Thomas Guerrero. American Association of Physicists in Medicine (AAPM): Annual Meeting, Denver, CO. Accuracy Preserving Normalization of Deformable Image Registration Solutions for Robust CT-Derived Ventilation Imaging. August 2017.
 6. Austin Fought, Leah Schubert, L Olsen, J Zhang, Edward Castillo, **RICHARD CASTILLO**, Thomas Guerrero, Yevgeniy Vinogradskiy. American Association of Physicists in Medicine (AAPM): Annual Meeting, Denver, CO. Functional-Guided Radiotherapy using Knowledge-Based Planning. August 2017.
 7. Yevgeniy Vinogradskiy, Austin Fought, Edward Castillo, **RICHARD CASTILLO**, A Liu, Moyed Miften. American Association of Physicists in Medicine (AAPM): Annual Meeting, Denver, CO. Using 4DCT-Ventilation to Evaluate Lung Response for Pediatric Patients Getting Thoracic Radiotherapy. August 2017.
 8. Matthew Jackson, Leah Schubert, Bernard Jones, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Moyed Miften, John Mitchell, Brian Kavanagh, Yevgeniy Vinogradskiy. American Society for Therapeutic Radiology and Oncology (ASTRO): Annual Meeting, Boston, MA. A Novel Lung Function Imaging Modality for Surgical Lung Cancer Evaluation. September 2016.
 9. Timothy Waxweiler, Leah Schubert, Quentin Diot, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Moyed Miften, Brian Kavanagh, Yevgeniy Vinogradskiy. American Society for Therapeutic Radiology and Oncology (ASTRO): Annual Meeting, San Antonio, TX. Towards a 4DCT-Ventilation Functional Avoidance Clinical Trial: Determining Patient Eligibility. October 2015.
 10. Yevgeniy Vinogradskiy, Timothy Waxweiler, Quentin Diot, **RICHARD CASTILLO**, Thomas Guerrero, Edward Castillo, Brian Kavanagh, Leah Schubert, Moyed Miften. American Association of Physicists in Medicine (AAPM): Annual Meeting, Anaheim, CA. Developing Clinical and Quantitative Guidelines for 4DCT-Ventilation Functional Avoidance Clinical Trial. May 2015.
 11. Edward Castillo, **RICHARD CASTILLO**, Thomas Guerrero. American Radium Society (ARS): Annual Meeting, Kauai, HI. Inverse Optimization for Correlating 4DCT Ventilation Imaging and Radiation Dose. May 2015.
 12. Ngoc Pham, **RICHARD CASTILLO**, Patricia Fox, Sobiya Ansari, Edward Castillo, Brian Hobbs, Thomas Guerrero. American Society for Therapeutic Radiology and Oncology (ASTRO): Annual Meeting, San Francisco, CA. Higher Doses to Smaller Volumes Explains Higher Proton Therapy Radiation Pneumonitis Rates Found. September 2014.
 13. Edward Castillo, **RICHARD CASTILLO**, David Fuentes, Thomas Guerrero. American Association of Physicists in Medicine (AAPM): Annual Meeting, Austin, TX. A Moving Least Squares Approach for Computing Spatially Accurate Transformations That Satisfy Strict Physiologic Constraints. July 2014.
 14. David Fuentes, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero. American Association of Physicists in Medicine (AAPM): Annual Meeting, Austin, TX. Morphometry Based Measurements of the Structural Response to Whole Brain Radiation. July 2014.
 15. Sarah Castillo, **RICHARD CASTILLO**, Edward Castillo, Tinsu Pan, Geoffrey Ibbott, Peter Balter, Brian Hobbs, Jianliang Dai, Thomas Guerrero. American Association of Physicists in Medicine (AAPM): Annual Meeting, Austin, TX. Improved Cine Four-Dimensional Computed Tomography (4D CT) Acquisition and Processing Method. July 2014.
 16. Yevgeniy Vinogradskiy, **RICHARD CASTILLO**, Edward Castillo, Thomas Guerrero, Moyed Miften, Brian Kavanagh, Mary Martel, Leah Schubert. American Association of Physicists in Medicine (AAPM): Annual Meeting, Austin, TX. Correlating 4DCT-Ventilation with Clinical Pulmonary Function Test Data. July 2014.
 17. Alexandra Cunliffe, S. Armato, **RICHARD CASTILLO**, Ngoc Pham, Thomas Guerrero, H. Al-Hallaq. American Association of Physicists in Medicine (AAPM) Annual Meeting, Austin, TX. Quantitative texture features

calculated in lung tissue from CT scans demonstrate consistency between two databases from different institutions. July 2014.

18. Scott Ingram, J. Yang, Beth Beadle, Arvind Rao, Richard Wendt, **RICHARD CASTILLO**, Laurence Court. American Association of Physicists in Medicine (AAPM) Annual Meeting, Austin, TX. Image-based camera tracking: Towards registration of endoscopic video to CT. July 2014.
19. Min Li, Edward Castillo, H. Luo, X. Zheng, **RICHARD CASTILLO**, Dmitriy Meshkov, L. Tan, Y. Wu, S. Zhang, Thomas Guerrero. American Society for Therapeutic Radiology and Oncology (ASTRO) Annual Meeting, Atlanta, GA. Deformable Registration of Lung Computed Tomography Images using Biomechanical Model. September 2013.
20. Edward Castillo, **RICHARD CASTILLO**, Thomas Guerrero. Computer Assisted Radiology and Surgery (CARS): Joint Congress of CARS, ISCAS, CMI, CAD, and EuroPACS, Heidelberg, Germany. Robust fitting of point match data using L1 optimization and B-spline parameterizations. June 2013.
21. Dmitriy Meshkov, **RICHARD CASTILLO**, Edward Castillo, Min Li. Ngoc Pham, Julianne Pollard, David Fuentes, Adenike Olanrewaju, Brian Hobbs, Thomas Guerrero. Society of Nuclear Medicine and Molecular Imaging, Vancouver BC, Canada. Pre-radiotherapy FDG PET predicts radiation pneumonitis in non-small cell lung cancer patients. June 2013.
22. Dmitriy Meshkov, **RICHARD CASTILLO**, Edward Castillo, David Fuentes, Ngoc Pham, Min Li, Adenike Olanrewaju, Julianne Pollard, Brian Hobbs, Thomas Guerrero. NCI Joint Workshop: Technology for Innovation in Radiation Oncology, Bethesda, MD. Clinical symptoms of radiation pneumonitis correlate with pulmonary metabolic radiation dose-response in lung cancer patients. June 2013.
23. Lindsay Mathew, **RICHARD CASTILLO**, Edward Castillo, Brian Yaremko, George Rodrigues, Roya Etemad-Rezai, Thomas Guerrero, Grace Parraga. American Association of Physicists in Medicine (AAPM) Annual Meeting, Charlotte, North Carolina, Four-dimensional x-ray computed tomography and hyperpolarized (3)He magnetic resonance imaging of gas distribution in lung cancer. July 2012.
24. Yevgeniy Vinogradskiy, **RICHARD CASTILLO**, Edward Castillo, Susan Tucker, Zhongxing Liao, Thomas Guerrero, Mary Martel. American Association of Physicists in Medicine (AAPM) Annual Meeting, Charlotte, North Carolina, Using 4DCT-Based Ventilation Imaging to Correlate Lung Dose and Function with Clinical Outcomes. July 2012.
25. Alfredo E Echeverria, Matthew McCurdy, **RICHARD CASTILLO**, Vincent Bernard, Natalia Velez-Ramos, William Buckley, Edward Castillo, Ping Liu, Eric Hyun, Thomas Guerrero. American Radium Society 94th Annual Meeting, Las Vegas, Nevada, Radiation Pneumonitis: Proton Therapy Local Dose Response and Clinical Symptoms. May 2012.
26. Matthew R McCurdy, Vincent Bernard, Alfredo Echeverria, Natalia V Ramos, **RICHARD CASTILLO**, Edward Castillo, William Buckley, Derek Bergsma, Alec Block, Eric Hyun, Faisal Ahmed, Thomas Guerrero. American Radium Society 94th Annual Meeting, Las Vegas, Nevada, Effect of End Range Protons on Metabolic Radiation Dose Response of the Lung. May 2012.
27. Enid Choi, Thomas Kim, Derek Bergsma, Matthew R McCurdy, **RICHARD CASTILLO**, Edward Castillo, Alec Block, Thomas Guerrero. American Radium Society 94th Annual Meeting, Las Vegas, Nevada, Comparing Effects of Radiation Therapy on Upper versus Lower Lung Lobes. May 2012.
28. **RICHARD CASTILLO**, Edward Castillo, Daniel Gomez, Jose Lopez, Thomas Guerrero. American Association of Physicists in Medicine (AAPM) Annual Meeting, Vancouver, British Columbia, John R. Cunningham Young Investigator Competition Finalist, Spatial Correlation of 4DCT Ventilation and SPECT Pulmonary Perfusion Defects in Patients with Malignant Airway Stenosis. July 2011.
29. Yevgeniy Vinogradskiy, **RICHARD CASTILLO**, Edward Castillo, Adam Chandler, Mary Martel, Thomas Guerrero. American Association of Physicists in Medicine (AAPM) Annual Meeting, Vancouver, British Columbia, Use

of Weekly 4DCT-Based Ventilation Maps to Quantify Changes in Lung Function for Patients Undergoing Radiation Therapy. July 2011.

30. Matthew McCurdy, Mohamad Wazni, Josue Martinez, **RICHARD CASTILLO**, Thomas Guerrero. American Association of Physicists in Medicine (AAPM) Annual Meeting, Vancouver, British Columbia, Post-Radiation Normalized FDG-PET Versus Radiation Dose Correlates with Radiation Pneumonitis Symptoms and the Nitric Oxide Ratio. July 2011.
31. **RICHARD CASTILLO**, Edward Castillo, Josue Martinez, Thomas Guerrero. American Association of Physicists in Medicine (AAPM) Annual Meeting, Philadelphia, PA, Ventilation from Four Dimensional Computed Tomography: Density versus Jacobian Methods. July 2010.
32. Matthew McCurdy, Maithili Shenoy, Josue Martinez, **RICHARD CASTILLO**, Thomas Guerrero. American Radium Society (ARS) Annual Meeting, Cancun, Mexico, Radiation Pneumonitis Response of the Upper versus Lower Lung Lobes, May 2010.
33. Thomas Guerrero, Matthew McCurdy, Ivorlyne Greene, Jan Pagilagan, **RICHARD CASTILLO**. National Cancer Institute (NCI) Translational Science Annual Meeting, Vienna, Virginia, Validation of the Pulmonary Metabolic Radiation Response as An Imaging Biomarker, November 2009.
34. Matthew McCurdy, Josue Martinez, **RICHARD CASTILLO**, Nicolas Zouain, Thomas Guerrero. American Society for Therapeutic Radiology and Oncology (ASTRO) Annual Meeting, Chicago, IL, Radiation Pneumonitis: Pulmonary Metabolic Response to Radiation in Lung Cancer Patients, November 2009.
35. **RICHARD CASTILLO**, Travis McPhail, Rudy Guerra, Edward Castillo, Joe Warren, Amit K. Garg, Thomas Guerrero. ASTRO Annual Meeting, Boston, MA, Interior Landmark Point Pairs Improve Deformable Image Registration Spatial Accuracy within the Lung, September 2008.
36. KM McMillan, AR Laird, **RICHARD CASTILLO**, DC Glahn, JL Lancaster, PT Fox. Functional localization of working memory: activation likelihood estimation of the n-back task. Proc. Intl. Soc. Mag. Reson. Med. 11, 2004.

PROFESSIONAL AFFILIATIONS

2019 - present:	Radiological Society of North America (RSNA)
2013 - 2017:	International Society for Bayesian Analysis (ISBA)
2013 - 2017:	American Association for Cancer Research (AACR)
2009 - present:	American Association of Physicists in Medicine (AAPM)