

JOSEPH M. REINHARDT, PH.D.

ROY J. CARVER CHAIR IN BIOMEDICAL ENGINEERING
PROFESSOR OF BIOMEDICAL ENGINEERING
ROY J. CARVER DEPARTMENT OF BIOMEDICAL ENGINEERING
THE UNIVERSITY OF IOWA

ACADEMIC APPOINTMENTS

2020–Present	Roy J. Carver Chair in Biomedical Engineering
Summer 2023	Acting Dean, College of Engineering University of Iowa, Iowa City, IA
2018–2023	Department Executive Officer (Chair), Roy J. Carver Department of Biomedical Engineering, University of Iowa, Iowa City, IA
2009–Present	Professor of Biomedical Engineering, University of Iowa, Iowa City, IA
2009–2016	Department Executive Officer (Chair), Department of Biomedical Engineering, University of Iowa, Iowa City, IA
2016–Present	Professor of Radiology (courtesy), University of Iowa, Iowa City, IA
2003–2009	Associate Professor of Biomedical Engineering, University of Iowa, Iowa City, IA
1997–2003	Assistant Professor of Biomedical Engineering, University of Iowa, Iowa City, IA
1996–1997	Assistant Research Scientist, Department of Radiology, University of Iowa College of Medicine, Iowa City, IA
1996–1999	Adjunct Assistant Professor of Radiology, University of Iowa, Iowa City, IA
1994–1995	Postdoctoral Research Fellow, Department of Radiology, University of Iowa, Iowa City, IA

PROFESSIONAL POSITIONS

2003–Present	Co-Founder, VIDA Diagnostics, Inc., Iowa City, IA http://www.vidadiagnostics.com
1989–1990	Senior Engineer, Communications Research and Development, Wang Laboratories, Lowell, MA
1985–1989	Systems Engineer, Radar Systems Laboratory, Raytheon Company, Wayland, MA

EDUCATION

1990–1994	Ph.D. The Pennsylvania State University, University Park, PA (Electrical Engineering) Dissertation Title: <i>Shape Representation and Automatic Object Extraction Using Mathematical Morphology</i> Advisor: Prof. W. E. Higgins
1985–1988	M.S. Northeastern University, Boston, MA (Electrical Engineering)
1981–1985	B.S. Carnegie Mellon University, Pittsburgh, PA (Electrical Engineering)

HONORS AND AWARDS

2023	Iowa Board of Regents Award for Faculty Excellence
2021	Elected Fellow, Asia-Pacific Artificial Intelligence Association (AAIA)
2020	Elected Fellow, Institute of Electrical and Electronics Engineers (IEEE)
2019	1 st place, AAPM Computed Tomography Ventilation Imaging Evaluation Challenge 2019 (CTVIE19), Wei Shao, Joseph M. Reinhardt, and Gary E. Christensen
2019	3 rd place, AAPM Computed Tomography Ventilation Imaging Evaluation Challenge 2019 (CTVIE19), Sarah E. Gerard, John E. Bayouth, and Joseph M. Reinhardt
2008	Honorable Mention Poster Award, SPIE Symposium on Medical Imaging, 2008, “Tracking the motion of the hyoid bone in videofluoroscopic swallowing studies”, Patrick Kellen, Darci Becker, Joseph M. Reinhardt, and Douglas van Daele
2008	Nominated for Graduate College “Outstanding Graduate Mentor” award for 2008.
2007	Honorable Mention Poster Award, SPIE Symposium on Medical Imaging, 2007, “Feature-based pairwise retinal image registration by radial distortion correction”, Sangyeol Lee, Michael Abramoff, and Joseph M. Reinhardt
2007	1 st place Siemens Preclinical CT Image of the Year for “Imaging and analysis for the assessment of the normal mouse lung,” acquired by Eric A. Hoffman, Geoffrey McLennan, Joseph M. Reinhardt, Gary E. Christensen, Deokiee Chon, Eman Namati, Jacqueline Namati, Lijun Shi, Joo Hyun Song, Kunlin Cao, and Jered Sieren from The University of Iowa, 2007.
2006	Elected Fellow, American Institute for Medical and Biological Engineering (AIMBE)
1998	Tau Beta Pi Excellence in Teaching Award, University of Iowa, Iowa City, IA.
1994	Graduate Research Award, The Pennsylvania State University, University Park, PA. Awarded top prize for research in Science and Engineering category for entry titled “Toward Efficient Morphological Shape Representation.”
1990–1991	Palmer Graduate Fellowship, The Pennsylvania State University, University Park, PA. Awarded for academic excellence.
1984	Tau Beta Pi Honor Society

PROFESSIONAL MEMBERSHIPS

Fellow, AIMBE; Fellow, IEEE; Fellow, AAIA, Member, AAAS; Member, AAPM; Member, BMES; Member, Sigma Xi; Member, Tau Beta Pi.

TEACHING ACTIVITIES

I. Classroom Teaching

Semester	Course	Course Title
Spring 2024	ENGR:1300	Intro. to Engineering Computing
Summer 2019	ENGR:2210	Electrical Circuits (online)
Summer 2018	ENGR:2210	Electrical Circuits (online)
Spring 2018	BME:2210	Bioimaging and Bioinformatics (team taught)
Spring 2018	ENGR:1300	Engineering Problem Solving II
Summer 2017	ENGR:2210	Electrical Circuits (online)
Spring 2017	BME:2210	Bioimaging and Bioinformatics (team taught)
Spring 2017	ENGR:1300	Engineering Problem Solving II
Summer 2016	ENGR:2210	Electrical Circuits (online)
Spring 2016	BME:1010	First-Year Forum
Summer 2015	ENGR:2210	Electrical Circuits (online)
Fall 2015	BME:5210	Medical Imaging Physics (team taught)
Fall 2015	BME:2210	Bioimaging and Bioinformatics (team taught)
Fall 2015	BME:3010	Leadership and Resourcefulness
Fall 2014	51:080	Bioimaging and Bioinformatics (team taught)
Fall 2014	51:092	Leadership and Resourcefulness
Spring 2014	51:080	Bioimaging and Bioinformatics (team taught)
Fall 2013	51:185	Physics of Medical Imaging
Fall 2013	51:080	Bioimaging and Bioinformatics (team taught)
Spring 2013	51:185	Physics of Medical Imaging
Fall 2012	51:080	Bioimaging and Bioinformatics (team taught)
Spring 2012	51:080	Bioimaging and Bioinformatics (team taught)
Fall 2011	51:185	Physics of Medical Imaging
Spring 2011	51:080	Bioimaging and Bioinformatics (team taught)
Fall 2010	51:185	Physics of Medical Imaging
Fall 2009	51:185	Physics of Medical Imaging
Spring 2009	51:060	Data Acquisition and Analysis (team taught)
Spring 2009	51:080	Data Acquisition and Analysis Lab (team taught)
Fall 2008	51:185	Physics of Medical Imaging
Spring 2008	51:186	Multi-dimensional Image Processing
Fall 2007	51:185	Physics of Medical Imaging
Spring 2007	59:008	Electrical Circuits
Spring 2007	51:060	Data Acquisition and Analysis (team taught)
Spring 2007	51:080	Data Acquisition and Analysis Lab (team taught)
Spring 2006	51:186	Multidimensional Image Processing (team taught)
Fall 2005	51:092	Leadership and Resourcefulness
Fall 2005	51:091	Professional Seminar
Fall 2005	51:060/161	Introduction to Biomedical Imaging
Spring 2005	59:006	Engineering Problem Solving II
Fall 2004	51:040/141	Biosystems Analysis I
Fall 2004	51:186	Physics and Analysis of Medical Images II
Spring 2004	51:185	Physics and Analysis of Medical Images I
Fall 2003	51:085/178	Biomedical Engineering Senior Design Project
Fall 2003	51:186	Physics and Analysis of Medical Images II
Fall 2002	51:085/178	Biomedical Engineering Senior Design Project
Fall 2002	51:185	Physics and Analysis of Medical Images I
Spring 2002	57:008	Electrical Circuits
Fall 2001	51:085/178	Biomedical Engineering Senior Design Project
Fall 2001	51:286	Contemporary Topics in Medical Imaging

Fall 2000	57:006	Engineering II
Fall 2000	51:185	Physics and Analysis of Medical Images I
Spring 2000	57:008	Electrical Circuits
Spring 2000	51:090	BME Freshman Forum
Fall 1999	51:040/141	Biosystems Analysis
Fall 1999	51:185	Physics and Analysis of Medical Images I
Fall 1999	51:189	Health Informatics I
Spring 1999	57:008	Electrical Circuits
Spring 1999	51:091	Professional Seminar
Spring 1999	51:189	Health Informatics I
Fall 1998	51:040/141	Biosystems Analysis
Fall 1998	51:185	Physics and Analysis of Medical Images I
Spring 1998	51:080/181	Biomeasurements
Spring 1998	51:189	Medical Informatics
Fall 1997	51:185	Physics and Analysis of Medical Images I
Fall 1997	96:283	Informatics Tools for Healthcare Decision Support
Spring 1997	51:080/180	Biomeasurements
Fall 1996	74:191	Medical Informatics
Spring 1996	51:186	Physics and Analysis of Medical Images II

II. Postdoctoral Fellow Supervision

Trainee Name	Period	Current Position
Luis Vargas Bonfiglio	August 2021–August 2023	Asst. Prof., Univ. Utah
Sarah Gerard	January–March 2019	Asst. Prof., Univ. Iowa
Shiba Kuanar	April 2019–August 2020	Staff, Yale Univ.

III. Graduate Student Supervision

Student Name	Degree	Grad. Date	Current Position
Joshua Carrizales	Ph.D.	May 2025	In progress
Zachary Althof	Ph.D.	May 2025	In progress
Hira Awan	Ph.D.	May 2025	In progress
Erik Cole	Ph.D.	May 2023	In progress
Faizyab Chaudhary	Ph.D.	May 2024	In progress
Zachary Althof	M.S.	May 2021	PhD student
Patrick Wilhelm	M.S.	May 2020	Rockwell Collins
Sarah Gerard	Ph.D.	Dec 2018	Asst. professor, Univ. of Iowa
Sandeep Bodduluri	M.S.	May 2012	
	Ph.D.	Dec 2016	Asst. Professor, Univ. of Alabama
Yang Wook Kim	M.S.	Aug. 2013	Samsung Corp.
Kaifang Du ¹	M.S.	Aug. 2011	
	Ph.D.	May 2013	Medical Physicist Residency
Vinayak Joshi ²	Ph.D.	Dec. 2012	Engineer, VisionQuest Biomedical
Xiayu Xu ²	M.S.	Dec. 2010	
	Ph.D.	Dec. 2012	Asst. Professor, Xi'an Univ.
Richard Amendola	M.S.	May 2012	Medical School
Panfang Hua	M.S.	Dec. 2010	Software Engineer
Tarunashree Yavarna	M.S.	Dec. 2010	Software Engineer
Kai Ding	M.S.	Aug. 2008	
	Ph.D.	May 2010	Asst. Professor, Johns Hopkins Univ.
Matthew Ternus	M.S.	Dec. 2009	Systems Engineer, Cerner Corp.
Shalmali Bodas	M.S.	Dec. 2008	Medical Physicist, Emory University
Sudharshan Bommu	M.S.	Dec. 2008	Engineer, Abbott Labs
Lijun Shi	M.S.	Dec. 2008	Senior Engineer, TerraRecon
Sangyeol Lee ²	Ph.D.	May 2008	Research Engineer, Alcon Corp.
Patrick Kellen	M.S.	May 2008	Software Engineer, VIDA Diagnostics
Soumik Ukil	Ph.D.	Dec. 2006	Senior Engineer, TerraRecon
Jennifer Dempsey	M.S.	May 2006	Engineer, VA Hospital
Yan Pan	M.S.	May 2005	Engineer, GE Medical Systems
Lina Arbach	Ph.D.	May 2005	Senior Scientist, Philips Medical Systems
Baojun Li	Ph.D.	Dec. 2004	Asst. Professor, Boston Univ.
Deepa Gopalakrishnan	M.S.	Dec. 2002	Software engineer
Li Zhang	Ph.D.	Dec. 2002	Senior Engineer, Siemens Corporate R&D
Osama Saba	M.S.	May 2001	Lecturer, Univ. of Iowa
Shiying Hu	M.S.	May 2001	Engineer, TerraRecon
Deniz Bilgen	M.S.	Dec. 2000	Member Technical Staff, Oak Ridge National Labs

IV. Visiting Student Supervision

Trainee Name	Program	Period	Home Institution
Xabier Artachevarria Artieda	Ph.D.	April–June 2009	Univ. of Navarra, Spain
Jinglong Niu	Ph.D.	Oct 2016–Sept 2017	BieHang Univ., China
Diedre Carmo	Ph.D.	Sept 2022–Feb 2023	Univ. of Campinas, Brazil

¹Jointly supervised with J. E. Bayouth, The Univ. of Iowa.

²Jointly supervised with M. D. Abrámoff, The Univ. of Iowa.

SERVICE ACTIVITIES

Department: Department Executive Officer, March 1, 2018–Present; Member, Medical Imaging Faculty Search Committee, 2017–2018; Department Executive Officer, March 1, 2009–June 30, 2016; Chair, Undergraduate Program Committee, 2008–2009; Chair, Undergraduate Program Committee, 2007–2008; Chair, Departmental Consulting Group on Promotions and Tenure, 2007–2008; Member, DEO Search Committee, 2007–2008; Chair, Undergraduate Program Committee, 2006–2007; Member, Departmental Consulting Group on Promotions and Tenure, 2006–2007; Chair, Departmental Consulting Group on Promotions and Tenure, 2005–2006; Undergraduate Program Committee, 2005–2006; Member, Departmental Consulting Group on Promotions and Tenure, 2004–2005; Undergraduate Program Committee, 2004–2005; Research Thrust Committee, 2004–2005; Member, Departmental Consulting Group on Promotions and Tenure, 2003–2004; Chairman, Undergraduate Program Committee, 2003–2004; Member, Strategic Planning Committee, 2002–2003; Undergraduate Internship Coordinator, 2001–2004; Member, Undergraduate Curriculum Committee, 2002–2003; Member, Graduate Program Enhancement Committee, 2001–2002; Assistant Program ABET Coordinator, 2001–2002; Chairman, Teaching Equipment Purchasing Committee, 2000–2001; Chairman, Digital Signal Processing Faculty Search Committee, 2001; Chairman, Strategic Planning Committee, 1999–2000; Chairman, Academic Affairs Committee Task force on new BME Fundamentals Course, 2000; Member, Department Enhancement Committee, 1999–2000; Faculty Secretary, 1997–1998; Faculty Secretary, 1998–1999; Member, Graduate Committee, 1997–1998.

College: Chair, APR Revision Task Force, 2020–2021; Chair, Iowa Flood Center director review committee, 2019; Member, Senior HR Director search committee; 2019; Member, Strategic Planning Committee, 2018; Member, Dean’s Advisory Instructional Faculty Promotion Committee, 2017–2018; Member, Teaching Committee, 2007–2008; IEEE Student Chapter Faculty Mentor, 2005–2007; Chair, Engineering Faculty Council, 2004–2005; Member, Engineering Faculty Council, 2003–2006; Member, EFC Computer Services Committee, 2003–2004; Member, College of Engineering Curriculum Committee, 2001–2002; Member, Faculty Outreach Planning Committee, Fall 2000; Member, College of Engineering Internship Director search committee, Fall 2000; Faculty Secretary, 1999–2000.

University: I-CLIC CT Research Facility Advisory Committee (NIH S10-130883); Faculty Senator, 2017–2020; Member, Vice President for Research UI-ISU Collaboration Pilot Grant Program Review Committee, Spring 2018; Member, College of Engineering Decanel Review Committee, Spring 2017; Chair, Search Committee for Director of National Advanced Driving Simulator, University of Iowa, Fall 2015–Spring 2016; Member, Review Committee for Department of Radiology, University of Iowa, Spring 2016; Member, TIER Presidential Advisory Board, Fall 2015/Spring 2016; Member, Interdisciplinary Program in Health Informatics Executive Committee, 2016; Member, Interdisciplinary Program in Health Informatics Executive Committee, Fall 2015; Member, Orthopaedics and Rehabilitation Associate Chair for Research Search Committee, Fall 2014/Spring 2015; Member, Director of Neurosciences Research Institute, Fall 2014/Spring 2015; Member, Head of Orthopaedics and Rehabilitation Search Committee, Spring 2013; Member, Director of Sponsored Programs Search Committee, Spring 2012; Member, Vice President for Research Conflict of Interest In Research Committee, AY 2008–2011; Member, Vice President for Research Internal Selection Committee for Biological Science Funding Programs, 2008; Judge, Jakobsen Conference, 2008; Member, Vice President for Research Internal Selection Committee for Biological Science Funding Programs, 2007; Judge, Jakobsen Conference, 2006; Member, Vice President for Research Internal Selection Committee for Major Research Equipment Grant Proposals, 2004; Member, Vice President for Research Advisory Committee on Biological Sciences, 2000–2003; Member, Grant Accounting Internal Review Committee, Fall 2001.

External: Conference Co-Organizer: Rising Scholars in BME Regional Conference, 2022, 2023; Biomedical Engineering Society (BMES) membership committee, 2021–present; European Science Foundation College of Experts, July 2020–present; AIMBE Fellow Selection Committee, 2019, 2020, 2021; Workshop Co-Organizer: “Interaction of Geometry and Topology in Biomedical Imaging,” IEEE International Symposium on Biomedical Imaging (ISBI) 2020; Clinical Program Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2020; European Science Foundation Review Panel, Nov. 2019; VA PULM study section, Nov. 2018; Organizing Committee, AAPM VAMPIRE19

Grand Challenge; Program Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2019; Reviewer, FONDECYT-CHILE program 2018; Program Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2018; Program Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2017; Program Committee, Bioimaging 2017; 2016 Special Session Chair, IEEE International Symposium on Biomedical Imaging (ISBI) 2016, Special Session: Frontiers in Pulmonary Image Analysis Program Committee, IEEE International Symposium on Biomedical Imaging (ISBI) 2016; Session Chair, Machine Learning in Medical Imaging Workshop, October 2016; Member of Long Range Planning Committee for the Council of Chairs of Bioengineering and Biomedical Engineering, 2013–2015; Associate Editor, SPIE Journal on Medical Imaging, 2013–present; Program Committee, Quantitative Medical Imaging Meeting, Imaging and Applied Optics Congress, Optical Society of America Meeting 2013; Symposium Co-Chairman, SPIE Symposium on Medical Imaging 2012; Symposium Co-Chairman, SPIE Symposium on Medical Imaging 2011; Co-Organizer, ICASSP Special Session on Image Processing, 2011; Member, NIH-CSR-Small Business RES July 14-15, 2011 Meeting; Reviewer, NIH Director’s New Innovator Awards, Jan. 2010; Reviewer, NIH NCRR P41 site visit team, Feb. 2010; Workshop Organizer, Grand Challenge: Medical Image Segmentation and Registration in the Clinic, 2010; Workshop Organizer, Third Annual Workshop on Pulmonary Imaging, 2010; Workshop Organizer, Second Annual Workshop on Pulmonary Imaging, 2009; Workshop Organizer, First Annual Workshop on Pulmonary Imaging, 2008; Program Committee, International Summit on the Future of Quantitative and Functional Lung Imaging, 2008; Organizer, Iowa Workshop on Lung Image Processing, Feb. 2008; Program Committee, International Conference on Pattern Recognition, 2008; Program Committee, SPIE Medical Imaging 2009: Image Processing Conference; Program Committee, International Symposium on Biomedical Imaging, 2008; Conference Chairman, SPIE Medical Imaging 2005–2008: Image Processing Conference; Reviewer, Dutch Science Foundation (NWO) Innovational Research Incentives Scheme, 2006, 2007; Member, NIH SBIR ZRG1-BST-L 51 Study Section on “Continued Development and Maintenance of Software”, Jan. 17-18, 2006; Scientific Review Committee, Computer Vision Approaches to Medical Image Analysis, 2005; Associate Editor, IEEE Transactions on Medical Imaging, 2005 - 2016; Scientific Review Committee, Information Processing in Medical Imaging Conference, 2005–2007; Scientific Review Committee, International Association of Science and Technology for Development Biomedical Engineering Conference, 2005-2007; External Reviewer, National Science and Engineering Research Council, Canada, 2005; Associate Editor, IEEE Transactions on Information Technology in Biomedicine, 2004, 2005; Program Committee, Computer Vision Approaches to Medical Image Analysis Workshop, 2004; Program Committee, IEEE International Symposium on Biomedical Imaging, 2003, 2005, 2007; Program Committee, SPIE Medical Imaging 2001–2004: Image Processing Conference; Scientific Review Committee, Information Processing in Medical Imaging Conference, 2003; Newsletter Editor, ASEE Biomedical Engineering Division 2001, 2002; Peer Review Committee, NSF SBIR Panel on Visualization and Imaging, Sept. 2001; Review Panelist, Civilian Research and Development Foundation, U.S. Department of State, June 2001; Program Committee, IEEE Southwest Symposium on Image Analysis, 2000; Newsletter Editor, ASEE Biomedical Engineering Division 2000; Ad-Hoc Member, NIH SBIR ZRG1-SSS-8 Study Section on Bioengineering and Physiology, Oct. 26-27, 1998; Ad-Hoc Member, NIH NHLBI Study Section on “Neurobiology of sleep and sleep apnea, airway biology, and pathogenesis of cystic fibrosis and acute lung injury”, Jan. 8, 1998; Program Committee, 1998 Symposium on Cardiovascular Imaging, University of Iowa; Program Committee, SPIE Medical Imaging 1997 Conference: Physiology and Function; Session Chairman, SPIE Medical Imaging 1997 Conference: Physiology and Function; Member, ISO X3S3.3 technical committee (OSI network layer), 1989–1990.

Other Outreach and Service: Participant, “Explore Engineering Day”, January 29, 2011; Coordinator, Workplace Learning Connection Program visit to Biomedical Engineering, January 19, 2011; Participant, “Explore Engineering Day”, March 27, 2010; Coordinator, Workplace Learning Connection Program visit to Cellular Engineering Technologies and VIDA Diagnostics, April 14, 2010; Middle school STEM outreach program, April 13, 2010; “Introduction to Biomedical Engineering” panelist for area high school students, November 10, 2009; Participant, Freshman/Parent Summer Orientation Program, 2009; Participant, “Explore Engineering Day”, April 18, 2009; Participant, Freshman/Parent Summer Orientation Program, 2007; Participant, Freshman/Parent Summer Orientation Program,

2006; Speaker, Gladbook-Reinbeck High School Career Day, 2006; Speaker, College of Engineering Workplace Learning Connection Program, 2006; Participant, Freshman/Parent Summer Orientation Program, 2005; Participant, Freshman/Parent Summer Orientation Program, 2004; Participant, Freshman/Parent Summer Orientation Program, 2003; “Introduction to X-ray Imaging” program for Horn Elementary School science curriculum, Sept. 23, 2003; Participant, Freshman/Parent Summer Orientation Program, 2002; NSPE Review Session Leader (Circuits), Spring 2002; Participant, Freshman/Parent Summer Orientation Program, 2001; Participant, Engineering Day, 2001; NSPE Review Session Leader (Circuits), Spring 2001; Participant, Engineering Day, 2000; Participant, Engineering Day, 1999; Participant, Freshman/Parent Summer Orientation Program, 1999; Participant, Engineering Day, 1999; Judge, 1999 State Invention Convention, Ames, Iowa; Participant, Freshman/Parent Summer Orientation Program, 1998; Participant, Engineering Day, 1998.

Journal Reviewing: *Computer Vision and Image Understanding*; *IEEE Transactions on Biomedical Engineering*; *IEEE Transactions on Image Processing*; *IEEE Transactions on Signal Processing*; *IEEE Transactions on Medical Imaging*; *IEEE Transactions on Pattern Analysis and Machine Intelligence*; *IEEE Computer Graphics and Image Processing*; *Automedica*; *Annals of Biomedical Engineering*; *Journal of Visual Communication and Image Representation*; *Multidimensional Systems and Signal Processing*; *Medical Image Analysis*; *Pattern Recognition*

RESEARCH FUNDING

Grants and Contracts as Principal Investigator

NHLBI, National Institutes of Health: *R01 HL151421, Structural Determinants of Disease Progression in COPD*. JM Reinhardt, Iowa site PI (Bhatt, project PI). Annual amount: \$2,637,144 total direct costs. 04/05/20-03/31/25.

NHLBI, National Institutes of Health: *T32 HL144461, Iowa Lung Imaging Training Program*. EA Hoffman and JM Reinhardt, MPI. Annual amount: \$1,553,354 total direct costs. 08/01/19-07/31/24.

NHLBI, National Institutes of Health: *R01 HL142625, Lung Biomechanics and Disease Progression in SPIROMICS*. JM Reinhardt, PI. Annual amount: \$448,905 direct costs year 1. 08/01/18-05/31/22.

NCI, National Institutes of Health: *R01 CA166703, Predicting Pulmonary Function Change to Improve Radiation Planning and Outcome*. JM Reinhardt, PI of Iowa subcontract; JE Bayouth, project PI. Annual amount: \$2,435,546 total direct costs. 6/1/13-3/31/18.

University of Iowa: *Developmental Leave*. JM Reinhardt, PI. Annual amount: 100% salary support. Fall 2016.

Cystic Fibrosis Foundation: *Tracking insufflated microdisks to quantify MCT in CF*. Reinhardt, PI; M. Welsh, program director. Annual amount: \$40,000/year direct costs. 6/1/14-5/31/16. (This pilot and feasibility project supports one PhD student to study the use of image analysis to quantify mucocilliary transport in normals and in CF.)

NHLBI, National Institutes of Health: *R01 HL079406, CT measurement of regional lung mechanics*. JM Reinhardt, PI. Annual amount: \$225,000 direct costs per year. 4/06-7/12.

Vital Images, Inc.: *Jennifer Dempsey BS/MS Project: Colonography Image Registration*. JM Reinhardt, PI. Annual amount: \$8,623 direct costs. 6/04-5/05.

University of Iowa: *Developmental Leave*. JM Reinhardt, PI. Annual amount: 100% salary support. Spring 2003.

Whitaker Foundation: *Transition Year: Measurement of Lung Parenchymal Strain via X-ray CT*. JM Reinhardt, PI. Annual amount: \$76,250 direct costs per year. 9/01–8/02.

National Science Foundation: *CAREER: Program in Pulmonary Imaging*. JM Reinhardt, PI. Annual amount: \$75,000 direct costs per year. 3/01–2/06.

Whitaker Foundation: *Biomedical Engineering Internship Program at the University of Iowa*. JM Reinhardt, PI. Annual amount: \$60,000 direct costs per year. 7/00–6/03.

University of Iowa: *Old Gold Summer Fellowship*. JM Reinhardt, PI. Annual amount: 1 month salary. Summer 1999.

Whitaker Foundation: *Measurement of Lung Parenchymal Strain via X-ray CT*. JM Reinhardt, PI. Annual amount: \$70,000 direct costs per year. 4/97–2/01.

Environmental Health Sciences Research Center (University of Iowa): *Accurate Measurement of Intrathoracic Airways*. JM Reinhardt, PI. Annual amount: \$15,000 direct costs. 4/97–3/98.

OTHER SIGNIFICANT FUNDING

The Carver Charitable Trust. Project title: *Biomedical Engineering to Address Respiratory and Pulmonary Disease*. Project period: 1/1/2019-12/31/2027. Budget: \$12,000,000 total direct costs. Joseph M. Reinhardt, program director.

This gift will be used to rapidly expand the research capabilities of the Biomedical Engineering Department by hiring five new tenure-track faculty in the areas of respiratory and pulmonary biomedical engineering. Funds from the gift will be used to support faculty start-up and PhD graduate students. A portion of this gift will be used to create a permanent endowment to enhance research and graduate education in the Department and to create a number of endowed professorships.

This gift is the largest gift ever received by the Department or by the College of Engineering.

In recognition of this gift and the previous significant support to the Department from the Carver Charitable Trust over the past two decades, the Department was renamed to be “The Roy J. Carver Department of Biomedical Engineering.”

PATENTS

Geoffrey McLennan, Martin Donnelley, Deepa Gopalakrishnan, Eric Hoffman, Joseph Reinhardt and Melissa Suter, “Methods and devices useful for analyzing color medical images,” U.S. Patent No. 7,613,335. Issued November 3, 2009.

Joseph M. Reinhardt, Soumik Ukil, Milan Sonka, Geoffrey McLennan, and Eric A. Hoffman, “Methods of smoothing segmented regions,” U.S. Patent No. 8,073,210. Issued December 6, 2011.

Michael Abramoff, Sangyeol Lee, Joseph M. Reinhardt, and Meindert Niemeijer, “Optimal Registration of Multiple Deformed Images using a Physical Distortion Model of the Imaging Distortion,” U.S. Patent No. 8,194,936. Issued June 5, 2012.

Juerg Tschirren, Milan Sonka, Geoffrey McLennan, Eric Hoffman, and Joseph Reinhardt, “Methods and devices for airway tree labeling and/or matching,” U.S. Patent No. 8,155,403. Issued April 10, 2012.

Juerg Tschirren, Milan Sonka, Joseph Reinhardt, Geoffrey McLennan, and Eric Hoffman, “Methods and devices for labeling and/or matching,” U.S. Patent No. 9,820,651. Issued November 21, 2017.

Michael D. Abramoff, Meindert Niemeijer, Xiayu Xu, Milan Sonka, and Joseph M. Reinhardt, “Automated determination of arteriovenous ratio in images of blood vessels,” U.S. Patent No. 9,924,867. Issued March 27, 2018.

Sarah E. Gerard and Joseph M. Reinhardt, “Fissurennet: a deep learning approach for pulmonary fissure detection in CT images,” U.S. Patent No. 11,475,562. Issued October 18, 2022.

PATENT APPLICATIONS

Eric A. Hoffman, Amin Motahari Bidgoli, and Joseph M. Reinhardt “Regional pulmonary V/Q via image registration and multi-energy CT,” U.S. Patent App. 62/846,394, filed on May 10, 2019.

PUBLICATIONS

Selected from one book, over 120 journal publications, and several hundred conference papers and abstracts.

I. Books

- [1] K. B. Chandran, H. S. Udaykumar, and **J. M. Reinhardt**, Eds., *Image-Based Computational Modeling of the Human Circulatory and Pulmonary Systems*. Springer, 2011.

II. Conference and Workshop Proceedings

- [1] J. M. Fitzpatrick and **J. M. Reinhardt**, Eds., *Medical Imaging 2005: Image Processing*, vol. 5747, The Proceedings of the SPIE, International Society for Optical Engineering, 2005.
- [2] **J. M. Reinhardt** and J. P. Pluim, Eds., *Medical Imaging 2006: Image Processing*, vol. 6144, The Proceedings of the SPIE, International Society for Optical Engineering, 2006.
- [3] **J. M. Reinhardt**, B. van Ginneken, and M. Sonka, *Guest editorial: Pulmonary image processing*, Special Issue on Pulmonary Imaging, Apr. 2006.
- [4] J. P. Pluim and **J. M. Reinhardt**, Eds., *Medical Imaging 2007: Image Processing*, vol. 6512, The Proceedings of the SPIE, International Society for Optical Engineering, 2007.
- [5] J. Z. Liang, H. Lu, D. N. Metaxas, and **J. M. Reinhardt**, *Guest editorial: Medical imaging informatics — information processing from image formation to visualization*, Special Issue on Medical Image Reconstruction, Processing and Visualization, Jan. 2007.
- [6] **J. M. Reinhardt** and J. P. Pluim, Eds., *Medical Imaging 2008: Image Processing*, vol. 6914, The Proceedings of the SPIE, International Society for Optical Engineering, 2008.
- [7] M. Brown, M. de Bruijne, B. van Ginneken, A. Kiraly, J.-M. Kuhnigk, C. Lorenz, K. Mori, and **J. M. Reinhardt**, Eds., *Proceedings of the First International Workshop on Pulmonary Image Analysis*, <http://www.lulu.com/content/3507981>, 2008.
- [8] M. Brown, M. de Bruijne, B. van Ginneken, A. Kiraly, J.-M. Kuhnigk, C. Lorenz, J. R. McClelland, K. Mori, A. Reeves, and **J. M. Reinhardt**, Eds., *Proceedings of the Second International Workshop on Pulmonary Image Analysis*, <http://www.amazon.com/Second-International-Workshop-Pulmonary-Analysis/dp/1448680891>, 2009.
- [9] M. Brown, M. de Bruijne, B. van Ginneken, K. Ding, A. Kiraly, J.-M. Kuhnigk, J. R. McClelland, K. Mori, and **J. M. Reinhardt**, Eds., *Proceedings of the Third International Workshop on Pulmonary Image Analysis*, <http://www.amazon.com/Third-International-Workshop-Pulmonary-Analysis/dp/1453776001>, 2010.

Rigorously Reviewed Journal Articles

- [1] **J. M. Reinhardt** and W. E. Higgins, “Comparison between the morphological skeleton and morphological shape decomposition,” *IEEE Trans. Patt. Anal. Machine Intell.*, vol. 18, no. 9, pp. 951–957, Sep. 1996.
- [2] **J. M. Reinhardt** and W. E. Higgins, “Efficient morphological shape representation,” *IEEE Trans. Image Proc.*, vol. 5, no. 1, pp. 89–101, Jan. 1996.

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III. Rigorously Reviewed Conference Articles

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VI. Other Publications

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