

CURRICULUM VITAE

Michael I. Miga, PhD
Harvie Branscomb Professor
Professor of Biomedical Engineering, Vanderbilt University
Professor Radiology and Radiological Sciences, and Neurological Surgery,
Vanderbilt University Medical Center
December 8, 2016

EDUCATION:

- **Bachelor of Science in Mechanical Engineering with Applied Mechanics**, University of Rhode Island, Department of Mechanical Engineering, Kingston, RI. 1987-1992.
- **Master of Science in Mechanical Engineering with Applied Mechanics**, University of Rhode Island, Department of Mechanical Engineering, Kingston, RI. 1992-1994.
- **Doctor of Philosophy in Engineering**. Dartmouth College, Thayer School of Engineering, Hanover, NH. 1994-1998.

PROFESSIONAL EXPERIENCE:

- **Contracting Engineer**, Naval Undersea Warfare Center (NUWC), Newport, RI. 5/1991 – 8/1994.
 - Involved in construction, testing, and data analysis of quarter-scale countermeasure launchers
 - Designed an optimally controlled launch profile for experimental countermeasure launchers using convex optimization techniques
- **Research Associate Scientist** (Post-doctoral training), Dartmouth College, Thayer School of Engineering, Hanover, NH. 10/1998-3/2000.
 - Continued dissertation-related research regarding biomechanical model of surgically-induced brain deformation
 - Computationally efficient strategies for simulating retraction, and resection of brain tissue and tested within an *in vivo* porcine system
- **Research Assistant Professor of Engineering**, Dartmouth College, Thayer School of Engineering, Hanover, NH. 4/2000-11/2000.
 - Continued research with brain biomechanics group
 - Novel algorithm for source localization within epilepsy patients
 - Time-varying elastodynamic wave models and harmonic wave models for the study of magnetic resonance elastography
- **Assistant Professor of Biomedical Engineering**, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 12/2000-12/2007.

- **Assistant Professor of Radiology and Radiological Sciences**, Vanderbilt University Medical Center, Department of Radiology, Nashville, TN. 1/2006–4/2009.
- **Associate Professor of Radiology and Radiological Sciences**, Vanderbilt University Medical Center, Department of Radiology, Nashville, TN. 5/2009–7/2013.
- **Associate Professor of Neurological Surgery**, Vanderbilt University Medical Center, Department of Neurological Surgery, Nashville, TN. 7/2009–5/2013.
- **Professor of Biomedical Engineering**, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 5/2013-present.
 - Developed a novel pre-doctoral training program for innovative engineering research in surgery and intervention
 - Co-Founder of Vanderbilt initiative in Surgery and Engineering (ViSE)/Vanderbilt Institute in Surgery and Engineering (VISE)
 - Director of the Biomedical Modeling Laboratory
 - Novel intraoperative laser range scanner to include conoscopic holography data for use in image-guided brain, liver, breast, and kidney surgery
 - Novel algorithms for cortical surface registration, brain deformation measurements, and deformation correction for image-guided brain, liver, breast, and kidney surgery
 - Novel elastographic methods in breast, skin, liver, kidney, and bone tissue systems (Modality Independent Elastography)
 - Radio-frequency ablation models and optimization techniques for optimal probe placement
 - Finite element deformation models for liver, breast, brain, and kidney surgical simulation
 - Novel mechanical assay(s) to assess changes in mechanical properties for: (1) murine liver under varying conditions of chemically-induced liver fibrosis, and (2) murine breast tumor models.
 - Biomechanical testing methodology to assess callous formation in murine fracture healing process
 - Model-based analysis to perform optimal deep brain stimulation
 - Investigating the use of co-registered ultrasound within the workflow of image-guided procedures to include strain imaging
 - Novel reaction-diffusion/mechano-inhibited tumor growth model for use in monitoring breast cancer chemotherapies
 - Examining the role of mechanical properties associated with breast cancer chemotherapies
 - Modeling aspiration strategies with novel robotic platform
 - Consulted on the development of cardiac bidomain models
 - Recent Laboratory Projects:
 - Nonrigid mechanics-based registration for image guided surgery
 - Realization of laparoscopic image guided surgery
 - Optimization of microwave ablation approaches for liver cancer

- Tumor growth forecasting mechanics for chemo- and radiation therapies
- Improved biotransport modeling in the brain for therapeutic applications
- Neuromodulation modeling for deep brain stimulation and epilepsy
- **Professor of Neurological Surgery**, Vanderbilt University Medical Center, Department of Neurological Surgery, Nashville, TN. 5/2013-present.
- **Professor of Radiology and Radiological Sciences**, Vanderbilt University Medical Center, Department of Radiology & Radiological Sciences, Nashville, TN. 8/2013-present.
- **Harvie Branscomb Professor, Endowed Chair**, Vanderbilt University, Nashville, TN. 7/1/2015-present.

OTHER EXPERIENCE:

- **Primary Leadership Development Course (PLDC)**, Fort Benning, GA, 6/1990.
- **Persian Gulf War Veteran (Operation Desert Shield & Operation Desert Storm)**, 443rd Civil Affairs Company, Warwick, RI attached to 414th Civil Affairs Company, U.S. Army, Utica, NY. Served in Saudi Arabia and Iraq - Activated: 12/1990-04/1991 – Total Enlistment: 2/1987-2/1995.
- **Vanderbilt University Institute for Imaging Science (VUIIS) Investigator**, Vanderbilt University Medical Center, Nashville, TN. 6/2003-present
- **Vanderbilt Institute for Integrative Biosystem Research and Education (VIBRE) Investigator**, Vanderbilt University, Nashville, TN. 1/2005-present
- **Co-Founder of Pathfinder Therapeutics Inc.**, 2969 Armory Dr., Suite 100A, Nashville, TN. (<http://www.pathfindertherapeutics.com>) 5/2004 – 12/2014.
- **Conference Chairman of SPIE Medical Imaging 2007, 2008, 2009, 2010: Visualization, Image-Guided Procedures, and Modeling Conference**, Orlando, FL, 2008.
- **Charter Member of NIH Biomedical Imaging Technology Study Section**, Washington, DC. 10/2010-6/2014
- **Co-Founder of Vanderbilt initiative in Surgery and Engineering Center (ViSE)**, Nashville, TN (3/2011-8/2015)
- **Seminar Chair for the Vanderbilt initiative in Surgery and Engineering (ViSE) Center**, Nashville, TN (5/2011-8/2015)
- **Associate Editor of *Journal of Medical Imaging***, (9/2013-present)

- **Programmatic Member of the Vanderbilt-Ingram Cancer Center (VICC), Host-Tumor Interactions Research Program**, Nashville, TN (8/2014-present)
- **Associate Editor of *Journal of Medical Robotics Research*** (1/2015-present)
- **Co-Founder of Vanderbilt Institute in Surgery and Engineering (VISE)**, Nashville, TN (9/2015-present)
- **Seminar Chair for the Vanderbilt Institute in Surgery and Engineering (VISE)**, Nashville, TN (9/2015-present)

AWARDS:

- **Army Commendation Medal** for meritorious service during *Operation Desert Shield & Operation Desert Storm*, 414th Civil Affairs Company, 1991.
- **Alma Hass Milhaum Fellowship in Biomedical Engineering**, Dartmouth College, Thayer School of Engineering, Hanover, NH. 1996-1997.
- **Thayer School Distinguished Fellow**, Dartmouth College, Thayer School of Engineering, Hanover, NH. 1997-1998.
- **Charles F. and Ruth D. Goodrich Prize**, Dartmouth College, Thayer School of Engineering, Hanover, NH. 1998.
- **Cum Laude: Medical Imaging 2003 Poster Award**, M. I. Miga and B. K. Lamprich, Vanderbilt University, Nashville, TN. 2003.
- **Cum Laude: Medical Imaging 2006 Poster Award**, C. R. Chen, M. I. Miga and R. L. Galloway, Vanderbilt University, Nashville, TN. 2003.
- **Cum Laude: Medical Imaging 2012 Poster Award**, M. J. Shannon, I. M. Meszoely, T. S. Pfeiffer, A. L. Simpson, K. Sun, J. E. Ondrake, and **M. I. Miga**, Vanderbilt University, Nashville, TN. 2011.
- **American Institute for Medical and Biological Engineering Fellow**, March 2014.
- **Thomas G. Arnold Prizes for Research**, Katelyn M. Flint, Vanderbilt University, May 2015. Mentor: **M. I. Miga**.
- **Honorable Mention: Medical Imaging 2015 Poster Award**, J. A. Collins, D. B. Brown, T. P. Kingham, W. R. Jarnagin, M. I. Miga, and L. W. Clements, 'Method for evaluation of predictive models of microwave ablation via post-procedural clinical imaging', SPIE 2015 Medical Imaging: Image-Guided Procedures, Robotic Interventions, (in press), Orlando, FL, 2015. Presenter: J. A. Collins, Mentor: M. I. Miga

- **Harvie Branscomb Endowed Chair**, July 1, 2015.
- **Best Poster: Medical Imaging 2016 Poster Award**, X. Yang, L. W. Clements, M. Luo, S. Narasimhan, R. C. Thompson, B. M. Dawant, and M. I. Miga, 'Integrated system for point cloud reconstruction and simulated brain shift validation using tracked surgical microscope', SPIE Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling Conference, Vol. 10135, 2017. Presenter: X. Yang, Mentor: M. I. Miga
- **JMI Featured Article:** R. C. Vijayan, R. C. Thompson, L. B. Chambless, P. J. Morone, L. He, L. W. Clements, R. H. Griesenauer, and M. I. Miga, 'An android application for determining surgical variables in brain-tumor resection procedures', Journal of Medical Imaging, (in press), 2017.

MEMBERSHIPS:

- Society of Photo-Optical Instrumentation Engineers (SPIE)
- IEEE Engineering and Medicine and Biology Society
- Biomedical Engineering Society (BMES)

SERVICE WORK:

VANDERBILT SERVICE WORK:

- **DEPARTMENT:**
 - Graduate Program Committee for Department of Biomedical Engineering (2000-present)
 - High Performance Computing Representative for Biomedical Engineering Department (2001)
 - Graduate Faculty Assembly Delegate
 - Core Undergraduate Curriculum Committee
 - Faculty Recruitment Committee for Imaging Initiative
 - Member of Graduate Education Committee for Strategic Planning Committee
 - Chair of Visibility and Outreach Committee for Strategic Planning Committee (2006)
 - Primary Faculty Advisor for Biomedical Engineering Society Student Chapter (2006-2014)
 - Faculty Advisor and Editor for Biomedical Engineering Newsletter (2006-2015)
 - **ABET Coordinator (2008-2014) –Site Visit Leader – Outcome, 6 Yrs, No Concerns**
 - Faculty Recruitment Committee for Biomaterials & Biophotonics (2009-2010)
 - BME Representative for Vanderbilt initiative in Surgery and Engineering – ViSE (5/2011- present)

- **Chair & Organizer of ABET Review Conference 2011, 2012, 2013, 2014**
- Faculty Recruitment Committee Chair for Surgery/Engineering (2012-2013)
- Faculty Advisor to Undergraduate BMES Student Society, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. 9/2007-2012.
- Faculty Director to BMEPulse Student Newsletter, Vanderbilt University, Department of Biomedical Engineering, Nashville, TN. (9/2008-present, <http://engineering.vanderbilt.edu/bme/bme-pulse.php>)
- Reappointment Dossier Review Committee Chair for BME Faculty (2011)
- Chair of Strategic Planning Committee: 'Big Idea' Committee Chair
- Faculty Recruitment Committee Chair for Surgery/Engineering (2014-2015)

- **SCHOOL OF ENGINEERING:**

- Brain Institute Representative from Biomedical Engineering Department
- Member of Biomath Study Group at Vanderbilt University
- Member of Collaboration to Solve Biological Problems Using Computational & Informatics Tools Committee (Lee E. Limbird, PhD, Associate Vice Chancellor for Research), 12/4/2002.
- Member of the Physics Shop Committee (2000-2010)
- Member of the School of Engineering Shop Committee (2000-2010)
- ACCRE Study Group (2000-present)
- Vanderbilt University School of Engineering Career Committee (2008-present)
- Vanderbilt University School of Engineering Website Committee (2008-present)

- **UNIVERSITY:**

- Early Acceptance Program for Vanderbilt University Medical School (2003-2010)
- PAVE Lecture Series for BME –(2004-2010)
- Member of Board of Appeals Board for Student Honor Council (2008-2010)
- Member of Board of Faculty Advisors to Student Honor Council (2006-present)
- Member of Exploratory Committee for Vanderbilt initiative in Surgery and Engineering (2010-present)
- Organizer of Vanderbilt Initiative for Surgery and Engineering Summer Research Series (2011-present)
- Organizer of the 1st -5th Annual Surgery & Engineering Symposium and Poster Session (2012- current)
- Reviewer for Vanderbilt Institute for Clinical and Translational Research Grant Review Studio (2012-current).
- Member of Conflict of Interest Working Group, Chair: Alison R. Cooper (2011-present)
- Member of sub-committee for Conflict of Interest Scientific Review, Chair: Christy Hooper (2011-present)
- Tenure Dossier Review Letter Writer
- Faculty Senate Engineering Representative (9/2015-present)

- Strategic Planning and Academic Freedom committee for Faculty Senate (9/2015-present)
- **CROSS-SCHOOL SERVICE WORK:**
 - Vanderbilt initiative/Institute in Surgery and Engineering Building Committee (2011-present)
 - Vanderbilt initiative/Institute in Surgery and Engineering Steering Committee (2015-present)
 - Vanderbilt initiative/Institute for Surgery and Engineering Seminar Chair (The quality and work associated with the recruitment and arrangement of speakers has been a recognized activity of mine across the university. We have traditional seminars, novel Dual-Speaker Format seminars – Multi-Speaker Format, Research-in-Progress seminar – RiP, and Workshops. Note speakers without affiliation are Vanderbilt University or Vanderbilt University Medical Center speakers).

Seminar Descriptor Key:

TS – Traditional Seminar
 DSF – Dual Speaker Format
 RiP – Research in Progress seminar
 Wkshp - Workshop

Summer Research Series 2011 Organizer:

Seminar - May 24, 2011 - Speakers: Robert L. Galloway PhD, Benoit M. Dawant PhD, Michael I. Miga PhD. (TS)

Seminar - June 9, 2011 - Speakers: Keith Obstein MD, Ishita Chen PhD. (DSF)

Seminar - June 23, 2011 - Speakers: Louise Mawn MD, and D. Caleb Rucker PhD. (DSF)

Seminar - July 7, 2011 - Speakers: Alan Bentley, and Andrea Bajo. (DSF)

Seminar - July 28, 2011 - Speakers: Robert Labadie MD, and Jack Noble PhD. (DSF)

August 2, 2011 - Speakers: Joseph Neimat MD & Srivatsan Pallavaram PhD (DSF)

August 16, 2011 - Speakers: Robert J. Webster PhD, Pietro Valdastrì PhD, & Nabil Simaan PhD. (TS)

Fall Seminar Series 2011 Organizer:

September 28, 2011 - Speakers: *Pratik Patel*, BrainLab & Quick Overview of Some Vanderbilt Guidance Work (TS)

November 3, 2011 - Speakers: Tara Helmer, Lesa Black. Vanderbilt Institute for Clinical Translational Research (VICTR) (TS)

December 12, 2011 - Speaker: *Alexandra Golby*, MD - Department of Neurosurgery, Harvard Medical School, Brigham & Women's Hospital (TS)

Spring Seminar Series 2012 Organizer:

Seminar – January 17, 2012 - Speakers: Seth Karp, MD & Dr. Jessica Burgner, PhD (DSF)

Seminar – January 31, 2012 – Speaker: *Joerg Raczowsky*, PhD, Karlsruhe Institute of Technology (TS)

Seminar – February 16, 2012 - Speakers: Luke Tomycz, MD & Dr. Amanda K. Buck, PhD (DSF)

Seminar – February 28, 2012 - Speakers: Ben Poulouse, MD & Dr. Bennett Landman, PhD (DSF)

Seminar – March 27, 2012 - Speaker: *Mark Rentschler*, PhD – University of Colorado (TS)

Seminar – March 29, 2012 - Speaker: *Ron Alterovitz*, PhD – University of North Carolina (TS)

Seminar – April 18, 2012 - Speaker: *Jeff Siewerdsen*, PhD – Johns Hopkins University (TS)

Instructional Summer Research Series 2012 Organizer:

Seminar - June 14, 2012 - Speaker: Ramya Balachandran, PhD. (Wkshp - Medical Image Registration)

Seminar - June 28, 2012 - Speaker: Amber Simpson, PhD. (Wkshp - Intraoperative Digitization & Image-to-Physical Registration)

Seminar - July 6, 2012 - Speaker: *Nassir Navab*, PhD., Technische Universität München, GE. (TS)

Seminar - July 12, 2012 - Speakers: Sri Pallavaram PhD., and Jack Noble, PhD. (Wkshp - Image-to-Image Registration & Image Segmentation)

Seminar - July 26, 2012 - Speaker: Jessica Burgner, PhD.. (Wkshp - Interventional Mechtronic Devices)

Seminar - August 9, 2012 - Speakers: Kay Sun, PhD and D. Caleb Rucker, PhD (Wkshp - Modeling & Optimization for Intervention)

Fall Seminar Series 2012 Organizer:

Seminar - September 10, 2012 - Speaker: *Gerard Ateshian*, PhD, Columbia University. (TS)

Seminar - September 27, 2012 - Speakers: Ingrid Meszoely, MD & Mike Miga, PhD (DSF)

Seminar - October 18, 2012 - Speakers: Ginger Holt, MD, and Xiaohong Bi, PhD (DSF)

Seminar - November 1, 2012 - Speakers: Reid Thompson, MD & Victoria Morgan, PhD (DSF)

Seminar - November 15, 2012 - Speaker: *Elisa Konofagou*, PhD - Columbia University (TS)

1st Vanderbilt Surgery & Engineering Symposium - December 12, 2012 - Speaker: *Reed Omary, MD* – Northwestern University/Incoming Chair of Radiology, VUMC (TS)

Spring Seminar Series 2013 Organizer:

Seminar – January 18, 2013 - Speaker: *Kevin Cleary*, PhD, Technical Director, Sheikh Zayed Institute for Pediatric Surgical Innovation. (TS)

Seminar – February 7, 2013 - Speakers: Keith Obstein, MD and Pietro Valdastri, PhD (DSF)

Seminar – February 21, 2013 - Speakers: Noel Tulipan, MD & Virginia Pensabene, PhD (DSF)

Seminar – March 14, 2013 - Speaker: *James Duncan*, PhD - Yale University. (TS)

Seminar – March 28, 2013 - Speakers: Ted Anderson, MD, and Will Grissom, PhD (DSF)

Seminar – April 11, 2013 – Speakers: Ben Poulouse, MD, and Bennett Landman, PhD (DSF)

Seminar – April 25, 2013 – Speaker: Barbara Gibson, Regulatory Affairs Office (TS)

Seminar – April 30, 2013 – Speakers: Duke Herrell, MD and Bob Webster, PhD (DSF)

Seminar – May 2, 2013 – Speakers: Medical Visualization Student Presentations (RiP)

Instructional Summer Research Series 2013 Organizer:

Seminar – May 30, 2013 - Speakers: Bernard Rousseau, PhD, and Haoxiang Luo, PhD (DSF)

Seminar – June 13, 2013 - Speaker: Melissa Skala, PhD, Robert J. Webster, PhD, & Michael I. Miga, PhD. (Wkshp – Grants and Grant Writing)

Seminar – June 27, 2013 - Speakers: Lola B. Chambless, MD (TS)

Seminar – July 9, 2013 – Speakers: John C. Pope, MD (TS)

Seminar – April 25, 2013 – Speaker: J. Mocco, MD (TS)

Seminar – April 30, 2013 – Speakers: *Dzung Pham*, PhD, National Institutes of Health (TS)

Seminar – May 2, 2013 – Speakers: Frank Aguirre, MD (TS)

Fall Seminar Series 2013 Organizer:

Seminar - August 29, 2013 - Speakers: Richard J. Gumina, MD & David W. Merryman, PhD (DSF)

Seminar - September 5, 2013 - Speaker: *Nobuhiko Hata*, PhD – Brigham and Women's Hospital, Harvard Medical School (TS)

Seminar – September 19, 2013 - Speaker: *Robert Howe*, PhD – Harvard University (TS)

Seminar – October 7, 2013 - Speaker: *Russ Taylor*, PhD – Johns Hopkins University (TS)

Seminar – October 31, 2013 - Speakers: Evan L. Brittain, MD, and Brett Byram, PhD. (DSF)

Seminar – November 21, 2013 - Speakers: Daniel B. Brown, MD & Logan W. Clements, PhD (DSF)

2nd Vanderbilt Surgery & Engineering Symposium - December 11, 2013 - Speaker: *Nick Hopkins*, MD - Chair of Neurosurgery, State University of New York at Buffalo (TS)

Spring Seminar Series 2014 Organizer:

Seminar - January 27, 2014 - Speakers: *Eric C. Luethardt*, MD, Washington University School of Medicine (TS)

Seminar – February 13, 2014 - Speaker: Tommy Wang, MD (TS)

Seminar – February 27, 2014 - Speaker: Otis Rickman, DO & Bob Webster, PhD (DSF)

Seminar – March 13, 2014 - Speaker: *Warren Grill*, PhD – Duke University (TS)

Seminar – March 27, 2014 - Speakers: William Nealon, MD, & Charles Caskey, PhD (DSF)

Seminar – April 17, 2014 - Speakers: *Simon Warfield*, PhD – Harvard Medical School, Children’s Hospital, Boston, MA (TS)

Instructional Summer Research Series 2014 Organizer:

Seminar – June 12, 2014 - Speakers: Richard Hendrick, PhD candidate, Zhoubing Xu, PhD candidate (RiPs)

Seminar – June 26, 2014 - Speaker: Rebekah Conley, & Michael I. Miga, PhD – guest seminar (RiP/Wkshp)

Seminar – July 11, 2014 - Speaker: Carolyn K. Novaleski, PhD candidate, Siyuan Chang, PhD candidate (RiPs)

Seminar – July 24, 2014 - Speaker: Kepra McBrayer, Yifei Wu, PhD candidate (RiPs)

Seminar – August 7, 2014 - Speakers: Neal Dillon, PhD candidate, Yiyuan Zhao, PhD candidate (RiPs)

Seminar – August 19, 2014 - Speakers: Michael I. Miga, PhD – NIH grant writing and review workshop follow-up to June 26th seminar (Wkshp)

Seminar – August 21, 2014 - Speakers: Bob Webster, PhD & Jack Noble, PhD – Workshop for Pre-Doc grant opportunities (Wkshp)

Fall Seminar Series 2014 Organizer:

Seminar – September 11, 2014 - Speakers: *Christopher L. Brace*, PhD - University of Wisconsin (TS)

Seminar – September 25, 2014 - Speakers: Mayur B. Patel, MD & Andrew J. Plassard, PhD Cand. EECS (DSF)

Seminar – October 9, 2014 - Speaker: *Cenk Cavusoglu*, PhD – Case Western University (TS)

Seminar – October 23, 2014 - Speaker: *Bill Higgins*, PhD – Pennsylvania State University (TS)

Seminar – November 11, 2014 - Speakers: Eric Grogan, MD, & Phil Swaney, PhD candidate ME (DSF)

3rd Annual Surgery & Engineering Symposium & Poster Session – December 10, 2014 - Speaker: *Robert M. Sweet*, MD – University of Minnesota (TS)

Spring Seminar Series 2015 Organizer:

Seminar – January 8, 2015 – Speaker: *Lucas H. Timmins*, PhD, Georgia Institute of Technology & Emory University, Department of BME (TS)

Seminar – January 13, 2015 – Speaker: *Gian-Luca Mariottini*, PhD, University of Texas at Arlington, Department of Computer Science (TS)

Seminar – January 15, 2015 – Speaker: *Wei Wang*, PhD, Harvard Medical School, Departments of Radiology & Radiation Oncology (TS)

Seminar – January 22, 2015 – Speaker: *Michael Sano*, PhD, Stanford University, Departments of Radiation Physics (TS)

Seminar – January 27, 2015 – Speaker: *Hong Chen*, PhD, Columbia University, Departments of Biomedical Engineering (TS)

Seminar – March 12, 2015 – Speaker: Albert Attia, MD (TS)

Seminar – March 26, 2015 – Speaker: Karl Zelik, PhD (TS)

Seminar – April 9, 2015 – Speaker: Robert Naftel, MD (TS)

Instructional Summer Research Series 2015 Organizer:

Seminar – June 11, 2015 - Speakers: Kenneth J. Holroyd, MD, MBA, Medical Director, VU Center for Technology Transfer and Commercialization (TS)

Seminar - June 25, 2015 - Speakers: Michael Siebold|, PhD Candidate, & Jarrod Collins, PhD Candidate (RiPs)

Seminar – July 16, 2015 - Speakers: Pooja Gaur, PhD Candidate, & Addisu Taddese, PhD Candidate (RiPs)

Seminar – July 28, 2015 - Speakers: Logan Clements, PhD, and Rebekah Conley, MS (Wkshp)

Seminar – August 11, 12, 2015 - Speaker: Mike Fitzpatrick, PhD (Wkshp)

Fall Seminar Series 2015 Organizer:

Seminar – September 3, 2015 - Speakers: VISE Summer Fellow Presentation – 8 speakers (RiPs)

Seminar – September 17, 2015 - Speakers: Peter Konrad, MD, & Dr. Pierre Francois, PhD (DSF)

Seminar – October 1, 2015 - Speaker: Thomas E. Yankeelov, PhD, Professor of Radiology (TS)

Seminar – October 13, 2015 - Speaker: *Douglas C. Fitzpatrick*, PhD, University of North Carolina at Chapel Hill, Department of Otolaryngology (TS)

Seminar – October 29, 2015 - Speakers: Rene H. Gifford, PhD & Jack H. Noble, PhD (DSF)

Seminar – November 12, 2015 - Speaker: *Gregory D. Hager*, PhD, Johns Hopkins University, Department of Computer Science (TS)

Seminar – December 1, 2015 - Speaker: *Alda Tam*, MD, University of Texas MD Anderson Cancer Center, Department of Radiology (TS)

4th Annual Surgery & Engineering Symposium & Poster Session – December 16, 2015 - Speaker: *Elizabeth Tyler-Kabara*, MD – University of Pittsburgh (TS)

Stats: 95 Seminars, 145(36*) speakers, 100(26*) engineers/scientists, 38(6*) physicians, 4(4*) industry, 4 staff - *outside Vanderbilt

Spring Seminar Series 2016 Organizer:

Seminar – January 13, 2016 – Speaker: *Junkai Kenny Tao*, PhD, Cleveland Clinic, Department of Ophthalmic Research, Cole Eye Institute (TS)

Seminar – January 21, 2016 – Speaker: *Chethan Pandarinath*, PhD, Stanford University, Department of Neurosurgery (TS)

Seminar – January 27, 2016 – Speaker: *Achana Venkatramen*, PhD, Yale University, Department of Radiology (TS)

Seminar – February 18, 2016 – Speaker: *Zhen Xu*, PhD, University of Michigan, Department of Biomedical Engineering (TS)

Seminar – March 3, 2016 – Speakers: Bill Fissel, MD, & Amanda Buck, PhD (DSF)

Seminar – March 17, 2016 – Speaker: EMPACT – hosted by Pietro Valdastrì, PhD, VU, Department of Mechanical Engineering & Byron Smith, MS, VISE Corporate Outreach Liaison (RiPs)

Seminar – March 31, 2016 – Speaker: *Jerry L. Prince*, PhD, Johns Hopkins University, Department of Electrical Engineering (TS)

Seminar – April 14, 2016 – Speakers: Filip Banovac, & Michael I. Miga, PhD (DSF)

Fall Seminar Series 2016 Organizer:

Seminar – August 23, 2016 – Speaker: *Matthieu Chabanas*, PhD, Grenoble Institute of Technology, Dept. of Computer Science (TS)

Seminar – August 25, 2016 – Speakers: VISE Summer Research Fellows (RiPs)

Seminar – September 8, 2016 – Speaker: *Nick Marko*, MD, Geisinger Medical Center, Department of Neurosurgical Oncology (TS)

Seminar – September 22, 2016 – Speaker: *Martin Gallagher*, PhD, Vanderbilt University Medical Center, Department of Neurology (TS)

Seminar – October 20, 2016 – Speaker: *Michael I. Miga*, PhD, Vanderbilt University, Department of Biomedical Engineering (Wkshp)

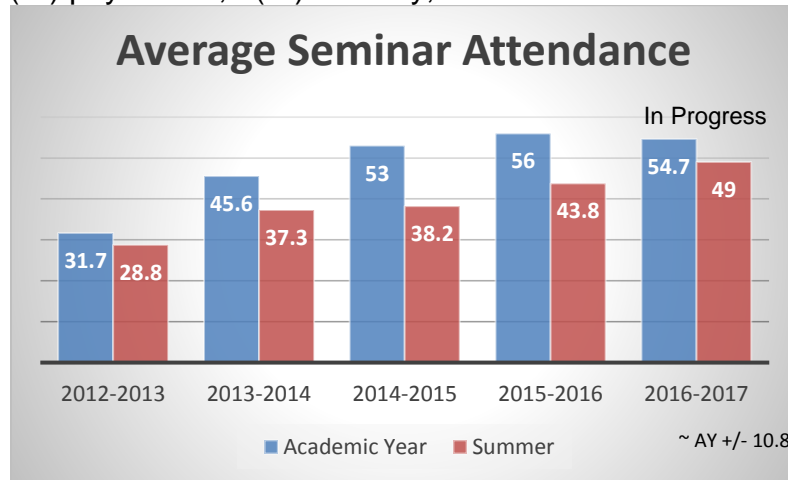
Seminar – November 3, 2016 – Speaker: Fabien Maldonado, MD, Vanderbilt University Medical Center, Department of Interventional Pulmonology (TS)

Seminar – November 10, 2016 – Speaker: *Ashwini Sharan*, MD, Thomas Jefferson University, Epilepsy and Neuromodulation Program, (TS)

5th Annual Surgery & Engineering Symposium & Poster Session – December 14, 2016 - Speaker: *Christopher Austin*, MD – Director of National Center for Advancing Translational Sciences, National Institutes of Health (Keynote - TS)

Cumulative Seminar Statistics:

Stats: 102 Seminars, 160(39*) speakers, 110(26*) engineers/scientists, 42(9*) physicians, 4(4*) industry, 4 staff - *outside Vanderbilt



FORMER UNIVERSITY SERVICE WORK:

- Faculty/Student Adviser of the IEEE Engineering in Medicine and Biology Society Chapter, Dartmouth College, Thayer School of Engineering, Hanover, NH. 1/1995-11/2000.
- Faculty Mentor for the Women in Science Program, Dartmouth College, Thayer School of Engineering, Hanover, NH. 1/2000-6/2000.

SCIENTIFIC COMMUNITY SERVICE WORK:

• SOCIETY WORK:

- IEEE Engineering Medicine and Biology Society Chapter, Chair of Central Tennessee Section, 2006, 2007, 2008, 2009, 2010, 2011

• MANUSCRIPT REVIEW:

- Reviewed Book Proposals from Oxford University Press
- Reviewer for *IEEE Trans. on Medical Imaging*
- Reviewer for *IEEE Trans. On Biomedical Engineering*
- Reviewer for *Medical Image Analysis*
- Reviewer for *Medical Physics*
- Reviewer for *Int. Journal for Numerical Methods in Engineering*
- Reviewer for *Journal of Biomechanics*
- Reviewer for *Ultrasound in Medicine & Biology*
- Reviewer for *Magnetic Resonance in Medicine*
- Reviewer for *Annals of Biomedical Engineering*
- Reviewer for *International Journal for Computer Assisted Radiology*
- Reviewer for *Journal of Medical Imaging*

• EDITOR WORK:

- Associate Editor of *Journal of Medical Imaging* (9/2013-present)
- Associate Editor of *Journal of Medical Robotics Research* (1/2015-present)

- **CONFERENCE LEADERSHIP ACTIVITIES:**

- Member of Program Scientific Review Committee for 4th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2001.
- Member of Program Scientific Review Committee for 5th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2002.
- Member of Program Scientific Review Committee for International Symposium on Surgery Simulation and Soft Tissue Modeling Reviews, 2003.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2003: Visualization, Display and Image-guided Procedures, 2/15-18/2003.
- Member of Program Scientific Review Committee for 6th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2003.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2004: Visualization, Display and Image-guided Procedures, 2004.
- Member of Program Scientific Review Committee for 7th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2004.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2005: Visualization, Display and Image-guided Procedures, 2005.
- Academic Representative for SPIE Medical Imaging 2005: Student Networking Reception, 2005.
- Organized the Submission of Conference Hosting Proposal for the 10th International Conference on Medical Image Computing and Computer-Assisted Intervention – MICCAI 2007, 9/14/2004, (not awarded).
- Member of Program Scientific Review Committee for 8th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2005.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2006: Visualization, Display and Image-guided Procedures, 2006.
- Short Course for SPIE Medical Imaging 2006: Image-Guided Procedures and Computer Aided Surgery
- Member of Program Scientific Committee for 3rd Symposium on Biomedical Simulation, 2006.
- Member of Program Scientific Review Committee for 9th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2006.
- Chairman of SPIE Medical Imaging 2007: Visualization, Display and Image-guided Procedures Conference, 2007.
- Chairman of SPIE Medical Imaging 2008: Visualization, Image-Guided Procedures, and Modeling Conference, 2008.
- Chairman of SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference, 2009.

- Chairman of SPIE Medical Imaging 2010: Visualization, Image-guided Procedures, and Modeling Conference, 2010.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2011: Visualization, Image-guided Procedures, and Modeling Conference, 2011.
- Member of Program Scientific Review Committee for 14th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2011.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2012: Image-guided Procedures, Robotic Interventions, and Modeling Conference, 2012.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2013: Image-guided Procedures, Robotic Interventions, and Modeling Conference, 2013.
- Member of Program Scientific Review Committee for 16th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2014.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2014: Image-guided Procedures, Robotic Interventions, and Modeling Conference, 2014.
- Member of Program Scientific Review Committee for 17th International Conference on Medical Image Computing and Computer-Assisted Intervention, 2015.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2015: Image-guided Procedures, Robotic Interventions, and Modeling Conference, 2015.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2016: Image-guided Procedures, Robotic Interventions, and Modeling Conference, 2016.
- Session Chair & Scientific Committee for SPIE Medical Imaging 2016: Image-guided Procedures, Robotic Interventions, and Modeling Conference, 2017.

● **STUDY PANEL ACTIVITIES:**

- Member of NSF-SBIR Panel on Imaging and Computational Bioengineering, 5/23-26/2002, 4/09-10/2003
- Adhoc Member of NIH-R01/R21/R33/R03 Panel on Biomedical Imaging Technology (BMIT), 6/7-6/8/2004, 6/6-6/7/2005, 2/4/2006, 10/5/2008, 2/1/2009
- Member of NIH-NCI-P01 Panel Site Review on Image Guided Therapy Cluster Review, 2/3/2005
- Member of NIH-NCI-Scientific Review Group: Image Guided Therapy Cluster Review, 9/26-27/2005
- Member of NIH-R01 Panel on Development and Maintenance of Software, PAR-PAR 05-057, 9/17/2006
- Member of NIH-R21 Panel on Innovative Ultrasound and Imaging, ZRG1 SBIB-U, 6/12/2007

- Member of NIH-ZRG1 SBIB-U Panel on Academic-Industrial Partnership Panel, 2/18/2009
- **Charter Member of NIH-R01/R21/R33/R03 Panel on Biomedical Imaging Technology (BMIT), 10/4/2010-9/30/2014 (4 year term)**
- Member of NIH-ZRG1 SBIB-Q 80 Recurring Special Emphasis Panel on Bioinformatics in Surgical Sciences, Imaging and Independent Living, 10/27/2014, 02/06/2015, 06/07/2015
- Member of ZEB1 OSR-C (O2) S – Multi-scale Modeling Program Review U01 Panel, 6/24/2015
- Member of NIH-R01/R21/R33/R03 Panel on Bioengineering, Technology, and Surgical Sciences Study Section (BTSS), 10/1-2/2015
- **Nominated Charter Member for NIH-R01/R21/R33/R03 Panel on Bioengineering, Technology, and Surgical Sciences Study Section (BTSS), 10/2017-6/2021 (4 year term)**

MENTOR SERVICE WORK:

- **UNDERGRADUATE TEACHING AND ADVISING:**

- Taught *BME 101: Introduction to Biomechanics* for in Fall 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009 with enrollments of 47, 49, 47, 49, 48, 41, 35, 45, and 33 students, respectively.
- Taught *BME 279: Modeling Living Systems for Therapeutic Bioengineering* for Spring 2002, 2003, 2006, 2008, 2010, 2011 with enrollments of 7, 2, 20, 27, 9, and 13 students, respectively.
- Taught *BME 210: Physiological Transport Phenomena* for Fall 2011, 2012, 2013 with enrollments of 38, 28, and 76 students, respectively
- Guest lecture for *SC250: Scientific Computing Toolbox* by Dr. Bobby Bodenheimer, 9/2011, 9/2012, 9/2013, 9/2014, 9/2015.
- Biomedical Engineering Program Advisor
- Research Experience for Undergraduates Advisor, 2001: Brad Lamprich
- Vanderbilt University Summer Research Program Advisor 2001: Jordan Winston
- BME 240 undergraduate mentor for Bradley K. Lamprich, 'Analysis of Model-Updated MR Images to Correct for Brain Deformation Due to Tissue Retraction', 5/2002.
- Research Experience for Undergraduates Advisor, 2002: Hiromi Terawaki
- Research Experience for Undergraduates Advisor, 2002: Sanjay Patel
- Research Experience for Undergraduates Advisor, 2003: Colin Caughram
- BME 272, 273 undergraduate mentor for Joe Anderson, Anne Benincasa, Taylor Davis, Marlana Justak, and Alaina Kiefer, 'Elastography for Breast Cancer Screening and Monitoring', 5/2004.
- Vanderbilt University Summer Research Program Advisor, 2005: Daniel Schuler
- Research Experience for Undergraduates Advisor, 2005: Tanoy Sinha
- BME 272, 273 undergraduate mentor for Erica Bozeman, Markesha Cook, Stephanie Cruz, 'A Novel Dermoscopic Elastographic Probe', 5/2007.
- Research Experience for Undergraduates Advisor, 2009: Syahirah Abdul Rahman

- Research Experience for Undergraduates Advisor, 2010: Syahirah Abdul Rahman
- Research Experience for Undergraduates Advisor, 2010: George Waits
- BME 272, 273 undergraduate mentor for Megan Luh, Hao Luo, 'Knee Alignment Verification System Utilizing Visual Recognition', 5/2010.
- Research Experience for Undergraduate Advisor, 2011: Michael Shannon
- Research Experience for Undergraduates Advisor 2011: Kristin Miller, Jeimi Zhu
- Research Experience Summer Advising 2012 – Samantha Munoz (Vanderbilt University) & Rahul Sastry (Stanford University)
- Research Experience for Undergraduate Advising 2014, 2015 – Katherine Flint (Vanderbilt University)
- Research Experience for Undergraduate Advising 2014 – Saramati Narasimhan (Vanderbilt University)
- Research Experience for Undergraduate Advising 2015 – Ma Luo, Rohan Vijayan, and Jacob Chadwell (Vanderbilt University)
- Research Experience for Undergraduate Advising 2016 –Rohan Vijayan, Derek Doss, Sarah Goodale (Vanderbilt University)

• **GRADUATE TEACHING AND ADVISING:**

- Taught *BME 301c (graduate core): Quantitative Methods in BME* for Fall 2009, 2010, 2011 with enrollments of 10, 16, and 19 students, respectively.
- Taught *BME 329 (formerly 395): Advanced Computational Modeling and Analysis in Biomedical Engineering* for Spring 2001, 2002, 2003, 2004, 2005, 2007, 2009, Fall 2011, 2013, 2014 with enrollments of 6, 3, 6, 13, 8, 7, 10, 6, 6, and 7 students, respectively.
- Taught *BME 7410 (formerly 300): Quantitative Methods in Biomedical Engineering* for Fall 2015 with enrollment of 18 students.
- Taught *BME 8903: Clinically Translational Engineering in Surgery and Intervention: Provocative Questions* for Spring 2016 with enrollment of 13 students – part of training grant program I designed associated with T32EB021937, 'Training Program for Innovative Engineering Research in Surgery and Intervention'.
- Taught *BME 8903: Clinical Interactions* for Fall 2016 with enrollment of students – part of training grant program I designed associated with T32EB021937, 'Training Program for Innovative Engineering Research in Surgery and Intervention'.
- Guest lectured in *BME 318: Principles and Applications in Magnetic Resonance Imaging* taught by Dr. Cynthia Paschal, Spring 2002.
- Guest lecture series for *CS 395: Medical Image Registration* taught by Dr. J. Michael Fitzpatrick, Fall 2003.
- Post-Doctoral Trainee Mentor
 - Aize Cao, PhD, Nanyang Technological University, Singapore, 7/1/2005-2008 (PM)
 - Staff Computer Systems Analyst, Institute for Medicine and Public Health, Vanderbilt University, Nashville, TN

- Prashanth Dumpuri, PhD, Vanderbilt University, Nashville, TN, 11/2007-2010 (PM)
 - Imaging Scientist, Perfint Healthcare Corporation, Florence, OR
- Amber Simpson, PhD, Queen's University, Kingston, Ontario, CA, 11/2009-4/2012 (PM)
 - Assistant Attending Computer Scientist, Memorial Sloan Kettering Cancer Center, New York, NY.
- D. Caleb Rucker, PhD, Vanderbilt University, Dept. of ME, Nashville, TN, 11/2011-7/2013 (PM)
 - Assistant Professor of Mechanical Engineering, University of Tennessee at Knoxville, Knoxville, TN.
- Jared Weis, PhD, Vanderbilt University, Dept. of BME, Nashville, TN, 9/2011-present (PM)
 - Research Assistant Professor, Vanderbilt University BME, Nashville, TN, 1/2015-present.
- L. Clements, PhD, Vanderbilt University, Dept. of BME, Nashville TN, 5/2013-present (PM)
 - Research Assistant Professor, Vanderbilt University BME, Nashville, TN, 5/2013-present.
- Primary Mentor (PM), Co-Primary Mentor (co-PM) , Co-Advisor (CA)
 - Leah Platenik, Dartmouth College, MS, 1/2001 (CA)
 - Tuhin K. Sinha, Vanderbilt University, MS, 12/2002 (PM)
 - Tuhin K. Sinha, Vanderbilt University, PhD, 10/2004 (PM)
 - Technical Project Director UCSF, Health eHeart Study, San Francisco, CA
 - Chad W. Washington, Vanderbilt University, MS, 8/2003 (PM)
 - PGY-7, Washington University School of Medicine, Department of Neurosurgery
 - Megan P. Rothney, Vanderbilt University, MS, 8/2004 (PM)
 - Associate Director of Biostatistics, Medical Affairs at Genomic Health, San Francisco, CA
 - David M. Cash, Vanderbilt University, PhD, 8/2004 (CA)
 - Senior Research Associate at Dementia Research Centre, Institute of Neurology, University College of London
 - Richard Chen, Vanderbilt University, PhD, 8/2006 (CA)
 - Resident, Department of Surgery, Washington University School of Medicine, St. Louis, MO
 - Stephanie L. Barnes, Vanderbilt University, MS, 5/2007 (PM)
 - Stephanie L. Barnes, Vanderbilt University, PhD, 8/2010 (PM)
 - Post-doctoral Fellow, Vanderbilt University Institute for Imaging Science, Vanderbilt University, Nashville, TN
 - Rowena Ong, Vanderbilt University, MS, 8/2007 (PM)
 - Senior Systems Engineer, Medtronic, Denver, CO
 - Prashanth Dumpuri, Vanderbilt University, PhD, 10/2007 (PM)
 - Imaging Scientist, Perfint Healthcare Corporation, Florence, OR

- Jao Ou, Vanderbilt University, MD, PhD, 10/2007 (PM)
 - Resident, Department of Radiology, University of Louisville, Louisville, KY
- Logan Clements, Vanderbilt University, PhD 10/2008 (CA)
 - Pathfinder Technologies, 1/2009-12/2014.
 - Research Assistant Professor, Vanderbilt University BME, Nashville, TN, 5/2013-present.
- Aaron Coffey, Vanderbilt University, MS, 5/2010 (PM)
 - Post-doctoral Fellow, Vanderbilt University Institute for Imaging Science, Vanderbilt University, Nashville, TN
- Sylvia Ding, Vanderbilt University, PhD, 12/2010 (co-PM)
 - Algorithm Engineer, KLA-Tencor Inc., Milpitas, CA
- Jared Weis, Vanderbilt University, MS, 1/2011 (PM)
- Jared Weis, Vanderbilt University, PhD, 8/2011 (PM)
 - Post-doctoral Fellow, Vanderbilt University Institute for Imaging Science, Vanderbilt University, Nashville, TN
- Ishita Chen (formerly Garg), Vanderbilt University, PhD, 5/2012 (PM)
 - Medical Student, Washington University School of Medicine, St. Louis, MO
- Thomas Pheiffer, Vanderbilt University, MS, 12/2010(PM)
- Thomas Pheiffer, Vanderbilt University, PhD, 6/2014(PM)
 - Research Scientist at Siemens Corporate Technology, Princeton, NJ
- Janet Ondrake, Vanderbilt University, MS, 5/2012 (PM)
- Ankur Kumar, Vanderbilt University, PhD, 10/2014(co-PM)
 - Intelligent Computing Consultant, Accenture, Florham, NJ.
- Yifei Wu, Vanderbilt University, MS, 10/2013 (PM)
 - Software Engineer at Metromatics Pty Ltd, North Lakes, Queensland, Australia
- David Hormuth, PhD, 5/2016 (co-PM)
 - Postdoctoral Research Associate, University of Texas at Austin
- Rebekah Conley, Vanderbilt University, MS, 5/2014 (PM)
 - PhD Candidate, Vanderbilt University
- Rebekah Griesenauer, Vanderbilt University, PhD, 5/2017 (PM)
- Jarrod Collins, Vanderbilt University, MS, 10/2015 (PM)
 - PhD Candidate, Vanderbilt University
- Jarrod Collins, Vanderbilt University, PhD, 5/2018 (PM)
- Saramati Narasimhan, MS, 5/2016 (PM)
- Ma Luo, MS, 5/2017 (PM)
- Jon Heiselman, MS 5/2017 (PM)
- Xiaochen Yang, PhD 5/2017 (co-PM)
- Matthew McKenna, MD, PhD, 5/2017 (co-PM)
- Hernan Gonzalez, MD, PHD, 5/2021 (co-PM)
- Thesis Committee Member:
 - Elijah Van Houten, Dartmouth College, PhD, 7/2001
 - Steven L. Hartman, Vanderbilt University, PhD, 5/2002

- Gwendolyn A. Banks, Vanderbilt University, MS, 8/2002
- Zhujiang Cao, Vanderbilt University, PhD, 8/2004
- Robert Palmer, Vanderbilt University, PhD, 5/2005
- Krista McBride, Vanderbilt University, PhD, 6/2008
- Marcella Woods, Vanderbilt University, PhD, 6/2005
- Junkai Xu, Vanderbilt University, PhD, 6/2008
- Anne Benincasa, Vanderbilt University, MS, 8/2006
- Kweku Addae-mensah, Vanderbilt University, PhD, 5/2008
- Ishita Garg, Vanderbilt University, MS, 8/2007
- John M. Virostko, Vanderbilt University, PhD, 5/2006
- Christine DeLorenzo, Yale University, PhD, 5/2007
- Fenghong Liu, Dartmouth College, PhD, 8/2008
- David Kwartowitz, Vanderbilt University, PhD 10/2008
- Nkiruka Aguegwu, Vanderbilt University, PhD, 10/2008
- Zohreh Barani Lonbani, University of Canterbury, MS, 8/2010
- D. Caleb Rucker, Vanderbilt University, PhD, 9/2011
- Rowena Ong, Vanderbilt University, PhD, 5/2012
- Courtney Glisson, Vanderbilt University, MS, 12/2014
- Michael Delisi, Vanderbilt University, PhD, 9/2014
- Joe Chen, Vanderbilt University, Ph.D, 5/2015
- Ryan David Datteri, Vanderbilt University, PhD, 7/2014
- Steven Boronyak, Vanderbilt University, PhD, 7/2015
- Yuan Liu, Vanderbilt University, PhD, 12/2015
- Alison Schroer, Vanderbilt University, PhD, 11/2016
- David Hormuth, Vanderbilt University, PhD, 5/2016
- Neal Dillon, Vanderbilt University, PhD, 12/2016
- Matthew McKenna, Vanderbilt University, PhD, 5/2017
- Abigail Searfoss, Vanderbilt University, PhD, 5/2017
- Amy Creecy, Vanderbilt University, PhD, 5/2017
- Sinead Miller, Vanderbilt University, PhD, 5/2019
- Jamie Tierney, Vanderbilt University, PhD, 5/2019
- Kristy Walsh, Vanderbilt University, PhD, 5/2019
- Staff/Faculty Engineer Advising:
 - Doug Hackworth, MS, Vanderbilt University, 8/2007-7/2010
 - Kay Sun, PhD, Vanderbilt University, 8/2010-10/2013
 - Amber Simpson, PhD, Research Assistant Professor, Vanderbilt University, 5/2012-12/2014
 - Jared Weis, PhD, Research Assistant Professor, Vanderbilt University, 1/2015 – present, **K-25 Award recipient**
 - Logan Clements, PhD, Research Assistant Professor, Vanderbilt University, 6/2013 - present

- **OTHER TEACHING AND ADVISING:**

- Research Experience for Teachers Advisor, 2005: Luke Diamond
- Research Experience for Teachers Advisor, 2005: Glenn Clay
- Research Experience for Teachers Advisor, 2006: Luke Diamond
- EMPHASIS Program Mentor for Medical Students, 2006-2007: Kevin Ha

- Research Experience for Teachers Advisor, 2007: Aubrey Anne McKelvey
- Research Experience for Teachers Advisor, 2008: Ray Henson, Jo Nola
- Research Experience for Teachers Advisor, 2009: Jo Nola
- Research Experience for Teachers Advisor, 2010: Michael Kiser
- Research Experience for Teachers co-Advisor, 2011: Bill Rodriguez
- Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2007: Visualization, Image-guided Procedures, and Modeling Conference.
- Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2008: Visualization, Image-guided Procedures, and Modeling Conference.
- Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2009: Visualization, Image-guided Procedures, and Modeling Conference.
- Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2010: Visualization, Image-guided Procedures, and Modeling Conference.
- 1-Day Workshop: M. S. Skala, R. J. Webster, and **M. I. Miga**, 'In Our Humble Opinions (IOHO): NIH Grant Tips, Experiences, & Review', ViSE Seminar Series, 6/2013.
- NIH Workshop: Chair (**M. I. Miga**) of Mock Study Section: Understanding the NIH Peer Review System Relative When Competing for Grant Awards, 2012, 2013, and 2014.
- Seminar: **M. I. Miga**, 'IMHO: NIH Review, Tips on Grantsmanship, & Updates', ViSE Seminar Series, 6/2014.
- Seminar: **M. I. Miga**, 'IMHO: New NIH Biosketch Discussion', ViSE Seminar Series, 4/2015.
- Seminar: **M. I. Miga**, 'The Vanderbilt Institute in Surgery and Engineering: A Team Science Case', Supporting Team Science at Vanderbilt Workshop, 9/2015.

GRANT ACTIVITY:

- **FUNDED:** \$38.4M in collaborative awards, and \$15.7M in awards as PI/co-PI
- Gray - Completed Awards, Black – Active & Pending Awards:
 - Whitaker Young Investigator Award (PI: Michael I. Miga), 'Modality Independent Elastography for Detection and Diagnosis of Breast Cancer', 12/1/2001-11/30/2004.
 - Vanderbilt University Discovery Grant (PI: Michael I. Miga), 'Compensating for Intraoperative Brain Shift with Models', 6/1/2002-5/31/2005.
 - NIH: R21CA91352 Exploratory/Development Grant (PI: William C. Chapman), 'Clinical Application of Image-Guided Liver Surgery', 6/1/2002-5/31/2003.
 - NIH: R01HL058241 Investigator Initiated Award (PI: John P. Wikswo), 'Electrophysiological Implications of Cardiac Bidomain', 12/1/2002-11/30/2007.

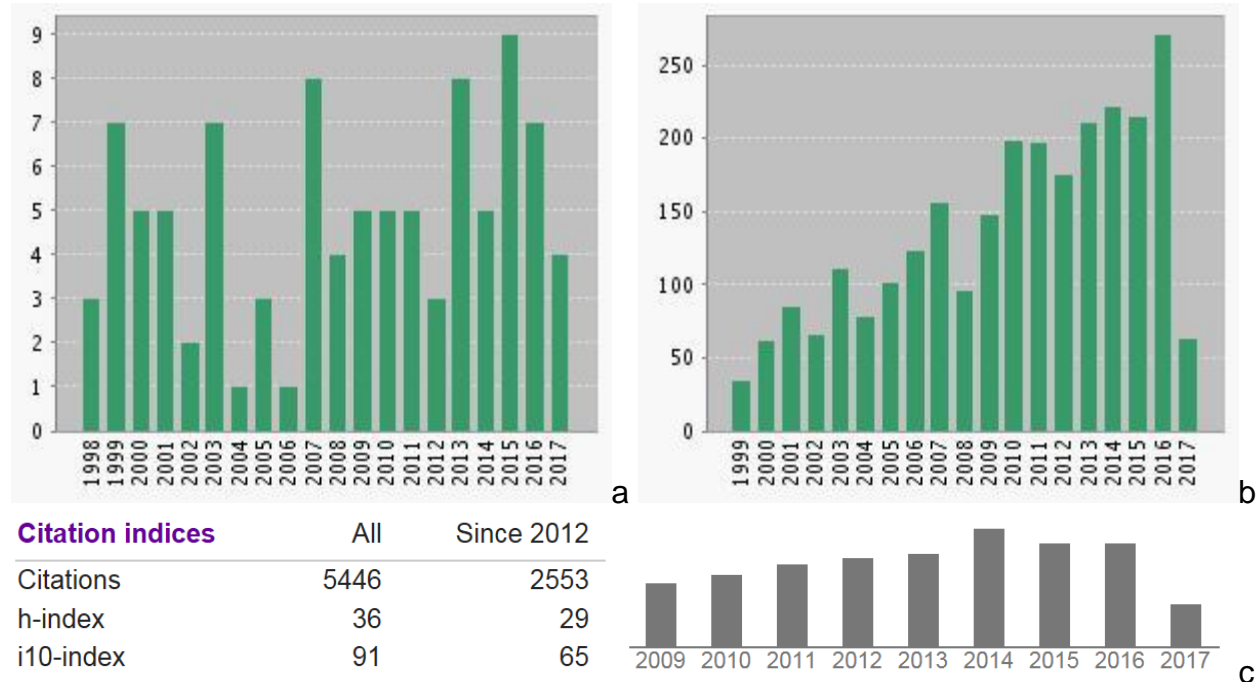
- NIH: SBIR R44CA086604 Small Business Innovation Research Grant (PI: David Kynor, CREATE, Inc.), 'Minimally Invasive Surgical Planning and Training System', 6/1/2003-5/31/2006.
- NIH: R33CA91352 Exploratory/Development Grant (PI: William C. Chapman), 'Clinical Application of Image-Guided Liver Surgery', 6/1/2003-5/31/2006.
- NIH: T32EB003817 Training Grant (PI: John Gore), 'Predoctoral Training Program in Biomedical Imaging', 7/1/2004-6/30/2009.
- NIH: 5R25CA092043 Training Grant (PI: Tom Yankeelov), 'Multidisciplinary Training in Basic and Translational Imaging of Cancer', 7/1/2001-6/30/2016.
- Congressional Directed Medical Research Program Predoctoral Training Award (PI: Jao Ou, Primary Mentor: Michael I. Miga), 'Development of an Automatic Modality Independent Image Analysis System for Tumor Screening', 12/1/2004-09/30/2007.
- Industrial Contract to Pathfinder Therapeutics (PI: Michael I. Miga), 'Laser Range Scanning for Image-Guided Liver Surgery', 11/1/2004-10/31/2005.
- NIH: R01NS049251 Investigator Initiated Award (PI: Michael I. Miga), 'Multimodal Registration of the Brain's Cortical Surface', 4/30/2005-5/1/2008.
- Whitaker Foundation Continuation Award (PI: Michael I. Miga), 'Modality Independent Elastography for Detection and Diagnosis of Breast Cancer', 2/1/2005-11/30/2005.
- NSF Graduate Student Fellowship (PI: Stephanie Barnes, Primary Mentor: Michael I. Miga), 'Development of Tumor Modeling', 8/1/2005-7/31/2008.
- NIH: R01EB006136 Investigator Initiated Award (PI: Benoit M. Dawant), 'Computer-assisted functional surgery', 6/1/2006-5/31/2010.
- NIH: R21EB007694 Exploratory/Development Grant (PI: Michael I. Miga), 'Correcting for Soft Tissue Deformation in Image-Guided Liver Surgery', 10/1/2007-9/30/2011.
- Vanderbilt University Discovery Grant (PI: Michael I. Miga), 'Quantifying Breast Cancer Architecture in Murine Systems Using Mechanical Testing, Cellular Assays, and Elastographic Imaging Methods', 8/1/2008-7/31/2010.
- NSF: CPATH (co-PI/PD: Bobby Bodenheimer, co-PI: Thomas J. Palmeri, co-PI: David A. Weintraub, co-PI: Michael I. Miga), 'Revitalizing Computing Education through Computational Science', 9/1/2009-8/31/2012.
- NIH: R01NS049251 Investigator Initiated Award - Renewal (PI: Michael I. Miga), 'Multimodal Registration of the Brain's Cortical Surface', 1/1/2009-1/1/2013.
- NIH: R01EB006136 Investigator Initiated Award (PI: Benoit M. Dawant), 'Computer-assisted functional surgery', 6/1/2010-5/31/2014.
- NIH: R01DK058697 Investigator Initiated Award – Renewal (PI: Alan Bradshaw), 'Biomagnetic Characterization of Gastric Dysrhythmias', 09/30/2010-08/31/2014.
- NIH: Academic Industrial Partnership - R01CA162477 (co-PI/PD: Michael I. Miga, co-PI: William R. Jarnagin, co-PI: James D. Stefansic), 'Clinical Translation of Deformation Compensation for Image-Guided Liver Surgery', 8/1/2011-6/30/2016.

- ViSE: Pilot Grant (co-PI/PD: Michael I. Miga, and co-PI: Ingrid M. Meszoely), 'Towards Improving Surgical Resection for Breast Conserving Surgery', 7/1/2012-6/30/2013.
- Equipment Contractual Agreement with BrainLAB (PI: Michael I. Miga), 'Realization of Brain Shift Compensation on BrainLAB's VectorLink Platform', 9/1/2012-2/1/2013.
- NIH: U01CA174706 Research Project Cooperative Agreement (co-PI/PD: Tom E. Yankeelov, and co-PI: Vito Quaranta), 'Image Driven Multi-scale Modeling to Predict Treatment Response in Breast Cancer', 4/1/2013-3/31/2018
- NIH: R21CA169387 Exploratory/Development Grant (PI: Tom E. Yankeelov), 'Integrating Quantitative Imaging and Biophysical Models to Predict Tumor Growth', 4/1/2013-3/31/2015.
- NIH: R21NS087796 Exploratory/Development Grant (co-PI/PD: Robert J. Webster & co-PI: Michael I. Miga), 'Debulking From Within: A Steerable Needle for Intracerebral Hemorrhage Aspiration', 4/1/2014-3/31/2016.
- NSF Graduate Student Fellowship (PI: Rebekah Conley, Primary Mentor: Michael I. Miga), 'Development of Image-guided Lumpectomy', 8/1/2013-7/31/2016.
- NIH: R01CA186193 Investigator Initiated Award - (co-PI/PD: Tom E. Yankeelov, & co-PI: Vito Quaranta), 'Quantitative Multiscale Imaging to Optimize Cancer Treatment Strategies', 4/1/2014-3/31/2019.
- NIH: R01NS049251 Investigator Initiated Award – 2nd Renewal (co-PI/PD: Michael I. Miga, co-PI: Reid C. Thompson, co-PI: Alex J. Golby), 'Multimodal Registration of the Brain's Cortical Surface', 4/1/2014-3/31/2019.
- Equipment Contractual Agreement with ZEISS (PI: Michael I. Miga), 'Deformation Correcting Surgical Microscope', 1/1/2016-12/31/2017.
- Trans-Institutional Program (TIP) (coPI/PD: Benoit Dawant, co-PIs: Bob Galloway, Duke Herrell, Rob Labadie, Mike Miga, Bob Webster), 'Bringing engineers and surgeons together to improve patient care', 9/2015-8/2020.
- NIH: R01EB020040 Investigator Initiated Award (PI: Brett Byram), 'Suppression and analysis of ultrasonic clutter during liver focal lesion biopsy', 10/1/2015-9/30/2019.
- NIH: T32EB021937 Training Grant (co-PI/PD: Michael I. Miga, co-PI: Robert Labadie), 'Training Program for Innovative Engineering Research in Surgery and Intervention', 6/1/2016-5/31/2021.
- NIH: K25CA204599 K25 Mentored Quantitative Research Career Development Award (PI/PD: Jared A. Weis: Primary Mentor: Michael I. Miga), 'Multi-Scale Biomechanical Modeling of Tumor Growth and Response in Breast Cancer', 7/1/2016-6/30/2020.
- NIH: R21CA199128 Exploratory/Development Grant (co-PI/PD: Michael I. Miga, co-PI: Ingrid M. Meszoely), 'A Computational Model-Enhanced Approach for Tumor Localization During Lumpectomy', 7/1/2016-6/30/2018.
- VISE Pilot Award (co-PI: Jared A. Weis, co-PI: Albert Attia), 'Image-based Mathematical Modeling to Differentiate Radiation-induced Necrosis from Tumor Recurrence Following Stereotactic Radiosurgery for Intracranial Metastasis', 11/1/2016-10/31/2017.

- **PENDING:**

- NIH: R01DK000 Investigator Initiated Award (co-PI/PD: Duke Herrell, co-PI: Bob Webster, co-PI: Michael I. Miga), 'Image Guided Robotic Nephron-Sparing Surgery', 09/1/2016-8/30/2021 – 12%, waiting council.

PUBLICATION SUMMARY:(citation report from *Web of Science & Google Scholar*)



(a,b) The analysis currently supports an average of 27 citations per item and an h-index of 27 on *Web of Science*. (c) For additional referencing, the h-index on *Google Scholar* is listed as 36 as well as other statistics.

REFEREED JOURNAL PUBLICATIONS: (Graduate and medical student authors advised or under the supervision of Dr. Miga for the published work are underlined with post-doctoral research associates bolded, *** are peer review full length conference papers – 60% rejection rate)

1. D. W. Roberts, A. Hartov, F. E. Kennedy, **M. I. Miga**, K. D. Paulsen, 'Intraoperative brain shift and deformation: a quantitative analysis of cortical displacement in 28 cases', *Neurosurgery*, Vol. 32, No. 4, pp. 749-760, 1998.
2. **M. I. Miga**, K. D. Paulsen, F. E. Kennedy, 'Von Neumann stability analysis of Biot's general two-dimensional theory of consolidation', *International Journal of Numerical Methods in Engineering*, Vol. 43, No. 5, pp. 955-974, 1998.
3. *****M. I. Miga**, K. D. Paulsen, F. E. Kennedy, P. J. Hoopes, A. Hartov, and D. W. Roberts, 'Initial in-vivo analysis of 3D heterogeneous brain computations for model-updated image-guided neurosurgery', *Lecture Notes in Computer Science: Medical*

Image Computing and Computer-Assisted Intervention – MICCAI 1998, Springer Verlag, New York, Vol. 1496, pp. 743-752, 1998.

4. K. D. Paulsen, **M. I. Miga**, F. E. Kennedy, P. J. Hoopes, A. Hartov, and D. W. Roberts, 'A computational model for tracking subsurface tissue deformation during stereotactic neurosurgery', *IEEE Transactions on Biomedical Engineering*, Vol. 46, No. 2, pp. 213-225, 1999.

5. H. Pallatrone, A. Hartov, J. McInerney, L. A. Platenik, **M. I. Miga**, F. E. Kennedy, K. D. Paulsen, D. W. Roberts, 'Coregistered ultrasound as a neurosurgical guide', *Stereotactic and Functional Neurosurgery*, Vol. 73, No.1-4, pp. 143-147, 1999.

6. *****M. I. Miga**, K. D. Paulsen, F. E. Kennedy, A. Hartov, D. W. Roberts, 'Model-updated image-guided neurosurgery using the finite element method: Incorporation of the falx cerebri', *Lecture Notes in Computer Science: Medical Image Computing and Computer-Assisted Intervention – MICCAI 1999*, Springer Verlag, New York, Vol. 1679, pp. 900-909, 1999.

7. A. Hartov, S. D. Eisner, D. W. Roberts, K. D. Paulsen, L. A. Platenik, **M. I. Miga**, 'Error analysis for a freehand 3D ultrasound system for neuronavigation', *Neurosurgical Focus*, Vol. 6, No. 3, Article 5, 1999.

8. E. E. W. Van Houten, K. D. Paulsen, **M. I. Miga**, F. E. Kennedy, J. B. Weaver, 'An overlapping subzone technique for MR based elastic property reconstruction', *Magnetic Resonance in Medicine*, Vol. 46, No. 2, pp.213-225, 1999.

9. **M. I. Miga**, D. W. Roberts, A. Hartov, S. Eisner, J. M. Lemry, F. E. Kennedy, K. D. Paulsen, 'Updated neuroimaging using intraoperative brain modeling and sparse data', *Stereotactic and Functional Neurosurgery*, Vol. 72, pp. 103-106, 1999.

10. **M. I. Miga**, K. D. Paulsen, J. M. Lemry, F. E. Kennedy, S. D. Eisner, A. Hartov, D. W. Roberts, 'Model-updated image guidance: Initial clinical experience with gravity-induced brain deformation', *IEEE Transactions on Medical Imaging*, Vol. 18, No. 10, pp. 866-874, 1999.

11. D. W. Roberts, **M. I. Miga**, S. D. Eisner, A. Hartov, J. Lemry, F. E. Kennedy, K. D. Paulsen, 'Intraoperative updated neuroimaging using brain modeling and sparse data', *Neurosurgery*, Vol. 45, No. 5, pp. 1199-1207, 1999.

12. **M. I. Miga**, K. D. Paulsen, P. J. Hoopes, F. E. Kennedy, A. Hartov, D. W. Roberts, 'In vivo analysis and modeling of interstitial pressure in the brain under surgical loading', *ASME Journal of Biomechanical Engineering*, Vol. 122, No. 4, pp. 354-363, 2000.

13. E. E. W. Van Houten, J. B. Weaver, **M. I. Miga**, F. E. Kennedy, K. D. Paulsen, 'Elasticity reconstruction from experimental MR displacement data: Initial experience with an overlapping subzone finite element inversion process', *Medical Physics*, Vol. 27, No. 1, pp. 101-107, 2000.

14. *****M. I. Miga**, A. Staubert, K. D. Paulsen, F. E. Kennedy, V. M. Tronnier, D. W. Roberts, A. Hartov, L. A. Platenik, K. E. Lunn, 'Model-updated image-guided neurosurgery: Preliminary analysis using intraoperative MR', *Lecture Notes in Computer Science: Medical Image Computing and Computer-Assisted Intervention – MICCAI 2000*, Springer Verlag, New York, Vol. 1935, pp. 115-124, 2000.
15. **M. I. Miga**, K. D. Paulsen, P. J. Hoopes, F. E. Kennedy, A. Hartov, D. W. Roberts, 'In-vivo analysis of heterogeneous brain deformation computations for model-updated image guidance', *Computer Methods in Biomechanics and Biomedical Engineering*, Vol. 3, No. 2, pp. 129-146, 2000.
16. **M. I. Miga**, K. D. Paulsen, P. J. Hoopes, F. E. Kennedy, A. Hartov, D. W. Roberts, 'In vivo quantification of a homogeneous brain deformation model for updating preoperative images during surgery', *IEEE Transactions on Biomedical Engineering*, Vol. 47, No.2, pp. 266-273, 2000.
17. **M. I. Miga**, D. W. Roberts, F. E. Kennedy, L. A. Platenik, A. Hartov, K. E. Lunn, K. D. Paulsen, 'Computational Modeling of Retraction and Resection for Updating Images During Surgery', *Neurosurgery*, Vol. 49, No. 1, pp. 75-84, 2001.
18. P. M. Meaney, K. D. Paulsen, B. W. Pogue, **M. I. Miga**, 'Microwave image reconstruction utilizing log-magnitude and unwrapped phase to improve high-contrast object recovery', *IEEE Trans. on Medical Imaging*, Vol. 20, No. 2, pp. 104-116, 2001.
19. E. E. W. Van Houten, **M. I. Miga**, J. B. Weaver, F. E. Kennedy, K. D. Paulsen, 'Three-dimensional subzone-based reconstruction algorithm for MR elastography', *Magnetic Resonance in Medicine*, Vol. 45, No. 5, pp. 827-837, 2001
20. J. B. Weaver, E. E. W. Van Houten, **M. I. Miga**, F. E. Kennedy, K. D. Paulsen, 'Magnetic resonance elastography using 3D gradient echo measurements of steady-state motion', *Medical Physics*, vol. 28, no. 8, pp.1620-1628, 2001.
21. **M. I. Miga**, T. E. Kerner, T. M. Darcey, 'Source localization using finite elements and targeted simulated annealing', *IEEE Trans. on Biomedical Engineering*, vol. 49, no. 7, pp. 743-745, 2002.
22. L. A. Platenik, **M. I. Miga**, D. W. Roberts, K. E. Lunn, F. E. Kennedy, A. Hartov, K. D. Paulsen, 'In Vivo quantification of retraction deformation modeling for updated image-guidance during neurosurgery', *IEEE Trans. on Biomedical Engineering*, vol. 49, no. 8, pp. 823-835, 2002.
23. ***T. K. Sinha, D. M. Cash, R. J. Weil, R. L. Galloway, **M. I. Miga**, 'Cortical surface registration using texture mapped point clouds and mutual information', *Lecture Notes in Computer Science: Medical Image Computing and Computer-Assisted Intervention – MICCAI 2002*, Springer Verlag, New York, Vol. 2488, Part 2, pp. 533-540, 2002.
24. **M. I. Miga**, 'A new approach to elastography using mutual information and finite elements', *Physics in Medicine and Biology*, vol. 48, no. 4, pp. 467-480, 2003.

25. D. M. Cash, T. K. Sinha, W. C. Chapman, H. Terawaki, B. M. Dawant, R. L. Galloway, and **M. I. Miga**, 'Incorporation of a laser range scanner into image-guided liver surgery: surface acquisition, registration, and tracking', *Medical Physics*, vol. 30, no. 7, pp. 1671-1682, 2003.
26. **M. I. Miga**, T. K. Sinha, D. M. Cash, R. L. Galloway, and R. J. Weil, 'Cortical surface registration for image-guided neurosurgery using laser-range scanning', *IEEE Transactions on Medical Imaging*, vol. 22, no. 8, pp.973-985, 2003.
27. ***V. Duay, T. K. Sinha, P. D'Haese, **M. I. Miga**, B. M. Dawant, 'Non-rigid registration of serial intra-operative images for automatic brain-shift estimation', *Lecture Notes in Computer Science: Biomedical Image Registration*, Springer Verlag, New York, Vol. 2717, pp. 61-70, 2003.
28. ***T. K. Sinha, V. Duay, B. M. Dawant, **M. I. Miga**, 'Cortical shift tracking using a laser range scanner and deformable registration methods', *Lecture Notes in Computer Science: Medical Image Computing and Computer-Assisted Intervention – MICCAI 2003*, Vol. 2879, Part 2, pp. 166-174, 2003.
29. ***P. Dumpuri, R. C. Chen, and **M. I. Miga**, 'Model updated image guidance: A statistical approach', *Lecture Notes in Computer Science: Medical Image Computing and Computer-Assisted Intervention – MICCAI 2003*, Vol. 2878, Part 1, pp. 375-382, 2003.
30. C. W. Washington, and **M. I. Miga**, 'Modality Independent Elastography (MIE): A New Approach to Elasticity Imaging', *IEEE Transactions on Medical Imaging*, vol. 23, no. 9, pp. 1117-1128, 2004.
31. T. K. Sinha, B. M. Dawant, V. Duay, D. M. Cash, R. J. Weil, and **M. I. Miga**, 'A method to track cortical surface deformations using a laser range scanner', *IEEE Transactions on Medical Imaging*, vol. 24, no. 6, pp. 767-781, 2005.
32. D. M. Cash, **M. I. Miga**, T. K. Sinha, R. L. Galloway, and W. C. Chapman, 'Compensating for intra-operative soft tissue deformations using incomplete surface data and finite elements', *IEEE Transactions on Medical Imaging*, vol. 24, no. 11, pp. 1479-1491, 2005.
33. **M. I. Miga**, M. P. Rothney, J. Ou, 'Modality Independent Elastography (MIE): Potential applications in Dermoscopy', *Medical Physics*, vol. 32, no. 5, pp. 1308-1320, 2005.
34. T. K. Sinha, **M. I. Miga**, D. M. Cash, and R. J. Weil, 'Intraoperative Cortical Surface Characterization Using Laser Range Scanning: Preliminary Results', *Neurosurgery*, Vol. 59, No. 4, pp. 368-377, 2006.
35. P. Dumpuri, R. C. Thompson, B. M. Dawant, A. Cao, **M. I. Miga**, 'An atlas-based method to compensate for brain shift: Preliminary Results', *Medical Image Analysis*, Vol. 11, No. 2, pp. 128-145, 2007.

36. D. M. Cash, M. I. Miga, S. C. Glasgow, B. M. Dawant, L. W. Clements, Z. Cao, R. L. Galloway, and W. C. Chapman, 'Image-guided liver surgery: Concepts and initial clinical experiences', *Journal of Gastrointestinal Surgery*, DOI: 10.1007/s11605-007-0090-6, 2007.
37. A. Lyshchik, R. Moses, S. L. Barnes, T. Higashi, R. Asato, **M. I. Miga**, J. C. Gore, A. C. Fleischer. Quantitative analysis of tumor vascularity in benign and malignant solid thyroid nodules. *Journal of Ultrasound in Medicine*, Vol. 26, pp. 837-846, 2007.
38. A. Lyshchik, R. Moses, S. L. Barnes, T. Higashi, **M. I. Miga**, A. C. Fleischer 'Sonographic appearance of thyroid tumors with different aggressiveness and metastatic potential', *American Journal of Roentgenology*, Vol. 188, No. 5, Suppl S., 2007
39. C. C. R. Chen, **M. I. Miga**, and R. L. Galloway, 'Characterization of tracked radiofrequency ablation in phantom,' *Medical Physics*, vol. 34, pp. 4030-4040, 2007.
40. S. L. Barnes, A. Lyshchik, M. K. Washington, J. C. Gore, and **M. I. Miga**, 'Development of a mechanical testing assay for fibrotic murine liver,' *Medical Physics*, vol. 34, pp. 4439-4450, 2007.
41. F. Granero-Molto, J. A. Weis, L. D. O'Rear, **M. I. Miga**, and A. Spagnoli, 'IGF-I engineered bone marrow mesenchymal stem cells improve the fracture healing process,' *Journal of Bone and Mineral Research*, vol. 22, pp. S105-S105, 2007.
42. J. A. Weis, F. Granero-Molto, L. D. O'Rear, **M. I. Miga**, and A. Spagnoli, 'Development of a high-resolution 3D Micro-CT based model to predict fracture callus histological architecture,' *Journal of Bone and Mineral Research*, vol. 22, pp. S482-S483, 2007.
43. A. Cao, R. C. Thompson, P. Dumpuri, B. M. Dawant, R. L. Galloway, S. Ding, and **M. I. Miga**, 'Laser range scanning for image-guided neurosurgery: Investigation of image-to-physical space registrations,' *Medical Physics*, vol. 35, pp. 1593-1605, 2008.
44. L. W. Clements, W. C. Chapman, B. M. Dawant, R. L. Galloway, and **M. I. Miga**, 'Robust surface registration using salient anatomical features for image-guided liver surgery: Algorithm and validation,' *Medical Physics*, vol. 35, pp. 2528-2540, 2008.
45. F. Granero-Molto, J. A. Weis, B. Landis, L. Longobardi, **M. I. Miga**, and A. Spagnoli, 'Mesenchymal Stem Cells Enhance Fracture Healing: Essential Role for Cytokines in Homing and Anti-Inflammatory Response,' *Journal of Bone and Mineral Research*, vol. 23, pp. S166-S167, 2008.
46. J. J. Ou, R. E. Ong, T. E. Yankeelov, and **M. I. Miga**, 'Evaluation of 3D modality-independent elastography for breast imaging: a simulation study,' *Physics in Medicine and Biology*, vol. 53, pp. 147-163, 2008.

47. R. C. Chen, **M. I. Miga**, R. L. Galloway, 'Optimizing Needle Placement Using Finite Element Models in Radiofrequency Ablation Planning', *IEEE Transactions on Biomedical Engineering*, vol. 56, no. 2, pp. 237-245, 2009.
48. S. L. Barnes, P. P. Young, **M. I. Miga**, 'A novel model-gel-tissue assay analysis for comparing tumor elastic properties to collagen content', *Biomechanics and Modeling in Mechanobiology*, Vol. 8, No. 4, pp. 337-34, 2009.
49. S. Ding, **M. I. Miga**, J. H. Noble, A. Cao, P. Dumpuri, R. C. Thompson, and B. M. Dawant, 'Semi-automatic registration of pre- and postbrain tumor resection laser range data: Method and validation', *IEEE Transactions on Biomedical Engineering*, Vol. 56, No. 3, pp.770-780, 2009.
50. F. Granero-Molto, J. A. Weis, **M. I. Miga**, B. Landis, T. J. Meyers, L. O'Rear, L. Longobardi, D. E. Jansen, D. P. Mortlock, A. Spagnoli, 'Regenerative effects of transplanted mesenchymal stem cells in fracture healing', *Stem Cells*, Vol. 27, No. 8., pp.1887-1898, 2009.
51. D. M. Kwartowitz, **M. I. Miga**, S. D. Herrell, R. L. Galloway, 'Towards image guided robotic surgery: multi-arm tracking through hybrid localization', *Int. J. Computer Assisted Radiology and Surgery*, Vol. 4, No. 3, pp. 281-286, 2009.
52. *****M. I. Miga**, J. A. Weis, F. Granero-Molto, A. Spagnoli, 'Quantifying mechanical properties in a murine fracture healing system using an inverse geometric nonlinear elasticity modeling framework', *Lecture Notes in Computer Science: Biomedical Simulation*, vol. 5958, F. Bello, and S. Cotin, Eds. Berlin: Springer-Verlag Berlin, pp. 29-37, 2010.
53. J. A. Weis, **M. I. Miga**, F. Granero-Molto, A. Spagnoli, 'A finite element inverse analysis to assess functional improvement during the fracture healing process', *Journal of Biomechanics*, Vol. 43, No. 3, pp. 557-562, 2010.
54. P. Dumpuri, R. C. Thompson, A. Cao, S. Ding, I. Garg, B. M. Dawant, and **M. I. Miga**, 'A fast efficient method to compensate for brain shift for tumor resection therapies measured between preoperative and postoperative tomograms', *IEEE Transactions on Biomedical Engineering*, Vol. 57, No. 6, 2010.
55. R. E. Ong, J. J. Ou, **M. I. Miga**, 'Non-rigid registration of breast surfaces using the Laplace and diffusion equations', *Biomedical Engineering Online*, Vol. 9, No. 8, 2010.
56. P. Dumpuri, L. W. Clements, B. M. Dawant, and **M. I. Miga**, 'Model-updated Image-guided Liver Surgery: Preliminary results using surface characterization', *Progress in Biophysics and Molecular Biology*, Vol. 103, No. 2-3, pp. 197-207, 2010.
57. F. Granero-Molto, T. J. Myers, J. A. Weis, Y. Yan, T. Li, L. Longobardi, **M. I. Miga**, A. Spagnoli, 'Mesenchymal stem cells expressing IGF-I improve fracture repair: The seed and the soil for tissue regeneration', *Endocrine Reviews*, Vol. 31, No. 3, Suppl. 1, 2010.

58. H. O. Altamar, R. E. Ong, C. L. Glisson, D. P. Viprakasit, **M. I. Miga**, S. D. Herrell, R. L. Galloway, 'Kidney deformation and intraprocedural registration: A study of elements of image-guided kidney surgery', *Journal of Endourology*, Vol. 25, No. 3, pp. 511-517, 2011.
59. I. Chen, A. M. Coffey, S. Ding, P. Dumpuri, B. M. Dawant, R. C. Thompson, and **M. I. Miga**, 'Intraoperative brain shift compensation: Accounting for dural septa', *IEEE Transactions on Biomedical Engineering*, Vol. 58, No. 3, pp. 499-508, 2011.
60. L. W. Clements, P. Dumpuri, W. C. Chapman, B. M. Dawant, R. L. Galloway, and **M. I. Miga**, 'Organ surface deformation measurement and analysis in open hepatic surgery: Method and preliminary results from 12 clinical cases', *IEEE Transactions on Biomedical Engineering*, Vol. 58, No.8, pp.2280-2289, 2011.
61. S. Ding, **M. I. Miga**, R. C. Thompson, and B. M. Dawant, 'Tracking vessels in intra-operative microscope video sequences for cortical displacement estimation', *IEEE Transactions on Biomedical Engineering*, Vol. 58, No. 7, pp. 1985-1993, 2011.
62. T. S. Pheiffer, J. J. Ou, R. E. Ong, and **M. I. Miga**, 'Automatic generation of boundary conditions using demons non-rigid image registration for use in 3D modality-independent elastography', *IEEE Transactions on Biomedical Engineering*, Vol. 58, No. 9, pp. 2607-2616, 2011.
63. T.S Pheiffer, A. L. Simpson, B. Lennon, R. C. Thompson, and **M. I. Miga**, 'Design and evaluation of an optically-tracked single-CCD laser range scanner', *Medical Physics*, Vol. 39, No. 2, pp. 636-642, 2012
64. R. L. Galloway, S. Duke Herrell, and **M. I. Miga**, 'Image-guided abdominal surgery and therapy delivery', *Journal of Healthcare Engineering*, , Vol. 3, No. 3, pp. 203-228, 2012.
65. J. A. Weis, F. Granero-Molto, T. J. Myers, L. Longobardi, A. Spagnoli, and **M. I. Miga**, 'Comparison of microCT and an inverse finite element approach for biomechanical analysis: Results in a MSC therapeutics system for fracture healing', *Journal of Biomechanics*, Vol. 45, No. 12, pp. 2164-2170, 2012.
66. J. Burgner, A. L. Simpson, J. M. Fitzpatrick, R. A. Lathrop, S. D. Herrell, **M. I. Miga**, and R. J. Webster, 'Conoscopic holography for intraoperative digitization: characterization and application for registration', *International Journal for Medical Robotics and Computer-Assisted Surgery*, Vol. 9, No. 2, pp. 190-203, 2012.
67. R. G. Abramson, L. R. Arlinghaus, J. Weis, X. Li, A. N. Dula, E. Chekmenev, S. Smith, **M. I. Miga**, V. Abramson, T. E. Yankeelov, 'Current and emerging quantitative magnetic resonance imaging methods for assessing and predicting response of breast cancer to neoadjuvant therapy', *Breast Cancer: Targets and Therapy*, Vol. 4, October, pp. 139-154, 2012.

68. A. M. Coffey, **M. I. Miga**, I. Garg, and R. C. Thompson, 'A surgical planning framework for brain tumor resection therapies', *International Journal for Computer-Assisted Radiology*, Vol. 8, No. 1, pp. 87-97, 2013.
69. A. L. Simpson, P. Dumpuri, J. E. Ondrake, J. A. Weis, and **M. I. Miga**, 'Preliminary study of a novel method for conveying corrected image volumes in surgical navigation', *International Journal for Medical Robotics and Computer-Assisted Surgery*, Vol. 9, No. 1, pp. 109-118, 2013.
70. A. L. Simpson, J. Burgner, C. L. Glisson, T. S. Pheiffer, S. D. Herrell, R. J. Webster, and **M. I. Miga**, 'A comparison study of contact and non-contact surface acquisition methods with application to image-guided interventions', *IEEE Trans to Biomedical Engineering*, Vol. 60, No. 4, pp. 1090-1099, 2013.
71. T. E. Yankeelov, N. Atuegwu, D. Hormuth, J. A. Weis, S. L. Barnes, **M. I. Miga**, and V. Quaranta, 'Towards clinically relevant mathematical modeling of tumor growth and treatment response', *Science Translational Medicine*, Vol. 5, No. 187, pp. 1-5, 2013.
72. D. Caleb Rucker, H. Gilbert, P. J. Swaney, J. Das, **M. I. Miga**, N. Sarkar, R. J. Webster III, 'Sliding mode control of steerable needles', *IEEE Transactions on Robotics*, Vol. 29, No. 5, pp. 1289-1299, 2013.
73. I. Chen, R. E. Ong, A. L. Simpson, K. Sun, R. C. Thompson, **M. I. Miga**, 'Integrating retraction modeling into an atlas-based framework for brain shift prediction', *IEEE Transactions on Biomedical Engineering*, Vol. 60, No. 12, pp. 3494-3504, 2013.
74. J. A. Weis, **M. I. Miga**, L. R. Arlinghaus, X. Li, A. B. Chakravarthy, V. Abramson, J. Farley, T. E. Yankeelov, 'A mechanically coupled reaction-diffusion model for predicting the response of breast tumors to neoadjuvant chemotherapy', *Physics in Medicine and Biology*, Vol. 58, pp.5851-5866, 2013.
75. T. S. Pheiffer, R. C. Thompson, D. C. Rucker, A. L. Simpson, and **M. I. Miga**, 'Model-based correction of tissue compression for tracked ultrasound in soft-tissue image-guided surgery,' *Ultrasound in Medicine and Biology*, Vol. 40, No. 4, pp. 788-803, 2014.
76. D. C. Rucker, Y. Wu, J. E. Ondrake, T. S. Pheiffer, A. L. Simpson, W. R. Jarnigan, and **M. I. Miga**, 'Mechanics-based nonrigid registration of CT liver volumes to intraoperative surface data', *IEEE Transactions on Medical Imaging*, Vol. 33, No. 1, pp. 147-158, 2014.
77. A. L. Simpson, D. A. Geller, A. W. Hemming, W. R. Jarnagin, L. W. Clements, M. I. D'Angelica, P. Dumpuri, M. Gonen, I. Zendejas, **M. I. Miga**, and J. D. Stefansic 'Liver planning software accurately predicts post-operative liver volume and measures early regeneration', *Journal of the American College of Surgeons*, Vol. 219, No. 2, pp.199-207, 2014.
78. A. L. Simpson, T. S. Pheiffer, D. Caleb Rucker, A. K. Sills, K. Sun, R. C. Thompson, and **M. I. Miga**, 'Evaluation of conoscopic holography for estimating tumor resection

cavities in model-based image-guided neurosurgery', *IEEE Transactions on Biomedical Engineering*, Vol.61, No. 6, pp. 1833-1843, 2014.

79. K. Sun, T. S. Pheiffer, J. A. Weis, A. L. Simpson, R. C. Thompson, and **M. I. Miga**, 'Real-time computer assisted surgery for brain shift correction using biomechanical models', *IEEE Journal of Translational Engineering in Health and Medicine*, Vol. 2, 2014.

80. U. Leung, A. L. Simpson, R. L. C. Araujo, M. Gonen, C. McAuliffe, **M. I. Miga**, E. P. Parada, P. J. Allen, M. I. D'Angelica, and T. P. Kingham, 'Remnant Growth Rate after Portal Vein Embolization Is a Good Early Predictor of Post-Hepatectomy Liver Failure,' *Journal of the American College of Surgeons*, vol. 219, pp. 620-630, Oct 2014.

81. A. L. Simpson, D. A. Geller, A. W. Hemming, W. R. Jarnagin, L. W. Clements, M. I. D'Angelica, P. Dumpuri, M. Gonen, I. Zendejas, **M. I. Miga**, and J. D. Stefansic, 'Liver Planning Software Accurately Predicts Postoperative Liver Volume and Measures Early Regeneration,' *Journal of the American College of Surgeons*, vol. 219, pp. 199-207, Aug 2014.

82. A. Kumar, **M. I. Miga**, T. S. Pheiffer, K. Sun, L. B. Chambless, R. C. Thompson, B. M. Dawant, 'Persistent and automatic intraoperative 3D digitization of surfaces under dynamic magnifications of an operating microscope', *Medical Image Analysis*, vol.19, no. 1, pp. 30-45, 2015.

83. A. L. Simpson, J. N. Leal, A. Pugalenth, P. J. Allen, R. P. DeMatteo, Y. Fong, M. Gonen, W. R. Jarnagin, T. P. Kingham, **M. I. Miga**, J. Shia, M. R. Weiser, and M. I. D'Angelica, 'Chemotherapy-Induced Splenic Volume Increase Is Independently Associated with Major Complications after Hepatic Resection for Metastatic Colorectal Cancer', *Journal of the American College of Surgeons*, vol. 220, No.3, pp. 271-280, March, 2015.

84. A. L. Simpson, L. B. Adams, P. J. Allen, M. I. D'Angelica, R. P. DeMatteo, Y. Fong, P. Kingham, U. Leung, **M. I. Miga**, E. P. Parada, W. R. Jarnagin, R. K. Do, 'Texture analysis of preoperative CT images for prediction of postoperative hepatic insufficiency: A preliminary study', *Journal of the American College of Surgeons*, vol. 220, No.3, pp. 339-346, March, 2015.

85. D. A. Hormuth, J. A. Weis, S. L. Barnes, **M. I. Miga**, E. C. Rericha, V. Quaranta, and T. E. Yankeelov, 'Predicting in vivo glioma growth with the reaction diffusion equation constrained by quantitative magnetic resonance imaging data', *Physical Biology*, Vol. 12, 2015.

86. R. H. Conley, I. M. Meszoely, J. A. Weis, T. S. Pheiffer, T. E. Yankeelov, and **M. I. Miga**, 'Realization of a biomechanical model assisted image guidance system for breast cancer surgery using supine MRI', *International Journal of Computer Assisted Radiology and Surgery*, DOI 10.1007/s11548-015-1235-9, 2015.

87. T. S. Pheiffer, and **M. I. Miga**, 'Toward a generic real-time compression correction framework for tracked ultrasound', *International Journal of Computer Assisted Radiology and Surgery*, DOI 10.1007/s11548-015-1210-5, 2015.
88. J. A. Weis, T. E. Yankeelov, and **M. I. Miga**, 'Repeatability assessment of modality independent elastography in a murine model of breast cancer', *Journal of Medical Imaging*, Vol. 2, No. 3, 036001-1-11, 2015.
89. **M. I. Miga**, K. Sun, I. Chen, L. W. Clements, T. S. Pheiffer, A. L. Simpson, and R. C. Thompson, 'Clinical evaluation of a model-updated image-guidance approach to brain shift compensation: Experience in 16 cases', *International Journal of Computer Assisted Radiology and Surgery*, vol. 11, pp. 1467-1474, Aug 2016.
90. **M. I. Miga**, 'Computational Modeling for Soft Tissue Image Guided Surgery: Neurosurgery and Beyond', *Annals of Biomedical Engineering*, Vol. 44, No. 1, pp. 128-138, 2016.
91. L. W. Clements, J. A. Collins, J. A. Weis, A. L. Simpson, L. B. Adams, W. R. Jarnagin, and **M. I. Miga**, 'Evaluation of model-based deformation correction in image-guided liver surgery via tracked intraoperative ultrasound', *Journal of Medical Imaging*, Vol. 3, No. 1, 2016.
92. G. S. Kassab, G. An, E. A. Sander, **M. I. Miga**, J. M. Guccione, S. Ji, and Y. Vodovotz, 'Augmenting surgery via multi-scale modeling and translational systems biology in the era of precision medicine: A multidisciplinary perspective', *Annals of Biomedical Engineering*, DOI: 10.1007/s10439-016-1596-4, 2016.
93. J. A. Weis, **M. I. Miga**, T. E. Yankeelov, 'Three-dimensional image-based mechanical modeling for predicting the response of breast cancer to neoadjuvant therapy', *Computer Methods in Applied Mechanics and Engineering*, (in press), 2016.
94. T. E. Yankeelov and **M. I. Miga**, 'Introduction to the Special Section on Clinical Applications of Multi-Scale Modeling', *Annals of Biomedical Engineering*, vol. 44, pp. 2589-2590, Sep 2016.
95. R. Ong, C. L. Glisson, J. Burgner-Kahrs, A. Simpson, A. Danilchenko, R. Lathrop, S. D. Herrell, R. J. Webster, **M. I. Miga**, and R. L. Galloway, 'A novel method for texture-mapping conoscopic surfaces for minimally invasive image-guided kidney surgery,' *International Journal of Computer Assisted Radiology and Surgery*, vol. 11, pp. 1515-1526, Aug 2016.
96. N. Rana, J. A. Weis, **M. I. Miga**, R. C. Thompson, K. D. Weaver, L. B. Chambless, A. J. Cmelak, and A. Attia , 'Image-Based Mathematical Modeling to Differentiate Radiation-Induced Necrosis From Tumor Recurrence Following Stereotactic Radiosurgery for Intracranial Metastasis', *International Journal of Radiation Oncology Biology Physics*, vol. 96, pp. E703-E703, Oct 2016.

97. R. C. Vijayan, R. C. Thompson, L. B. Chambless, P. J. Morone, L. He, L. W. Clements, R. H. Griesenauer, and **M. I. Miga**, 'An android application for determining surgical variables in brain-tumor resection procedures', *Journal of Medical Imaging*, (in press), 2017. *** **Featured Article**
98. J. A. Collins, J. A. Weis, J. S. Heiselman, L. W. Clements, A. L. Simpson, W. R. Jarnagin, and **M. I. Miga**, 'Improving registration robustness for image-guided liver surgery in a novel human-to-phantom data framework', *IEEE Transactions on Medical Imaging*, (in press), 2017.
99. R. H. Griesenauer, J. A. Weis, L. R. Arlinghaus, and **M. I. Miga**, 'Breast tissue stiffness estimation for surgical guidance using gravity-induced excitation', *Physics in Medicine and Biology*, (in press), 2017.
100. L. W. Clements, J. A. Collins, J. A. Weis, A. L. Simpson, T. P. Kingham, W. R. Jarnagin, and **M. I. Miga**, 'Deformation correction for image guided liver surgery: An intraoperative fidelity assessment', *Surgery*, (in press), 2017.

REFEREED JOURNAL PUBLICATIONS IN SUBMISSION: (Graduate and medical student authors advised or under the supervision of Dr. Miga for the published work are underlined with post-doctoral research associates bolded)

101. X. Yang, L. W. Clements, M. Luo, S. Narasimhan, R. C. Thompson, B. M. Dawant, and **M. I. Miga**, 'Stereovision-based integrated system for point cloud reconstruction and simulated brain shift validation,' *Journal of Medical Imaging*, (submitted), 2017.
102. Ma Luo, S. F. Frisken, J. A. Weis, L. W. Clements, P. Unadkat, R. C. Thompson, A. J. Golby, and **M. I. Miga**, 'Retrospective study comparing model-based deformation correction to intraoperative magnetic resonance imaging for image-guided neurosurgery', *Journal of Medical Imaging*, (submitted), 2017.

BOOK CHAPTERS:

- K. D. Paulsen, and **M. I. Miga**, 'Chapter 15: Biomechanical modeling for image registration: Applications in image-guided neurosurgery', Medical Image Registration, by editors: J. V. Hajnal, D. L. G. Hill, and D. J. Hawkes, CRC Press, pp. 332- 362, 2001.
- M. I. Miga**, T. K. Sinha, and D. M. Cash 'Techniques to Correct for Soft Tissue Deformations during Image-Guided Brain Surgery', Biomechanics Applied to Computer Assisted Surgery, by editor: Yohan Payan, Research Signpost Publications, 2005.
- M. I. Miga**, M. M. Doyley, J. C. Bamber, John B. Weaver, K. D. Paulsen, and J. J. Ou, 'Elastography in Breast Imaging', Emerging Technologies in Breast Imaging and Its Applications, by editor: Jasit Suri, American Scientific Publications, (in press), 2006.

A. L. Simpson, P. Dumpuri, W. R. Jarnagin, and **M. I. Miga**, 'Model-Assisted Image Guided Liver Surgery using Sparse Intra-operative Data', Soft Tissue Biomechanical Modeling for Computer Assisted Surgery, by editor: Yohan Payan, Springer Verlag, 2012.

R. L. Galloway, and **M. I. Miga**, 'Chp 9: Organ Deformation and Navigation', Imaging and Visualization in The Modern Operating Room, by editors: Fong, Y., Giulianotti, P.C., Lewis, J., Koerkamp, B.G., Reiner, Th. (Eds.), Springer Verlag, 2014.

M. I. Miga, L. W. Clements, J. A. Weis, 'Chp: Image-Guided Procedures in Surgery and Intervention: Challenges in Image-to-Physical Registration & Beyond', Encyclopedia of Medical Robotics by editors: Jaydev P. Desai, World Scientific Publishing Company, (submitted), 2016.

PAPERS IN CONFERENCE PROCEEDINGS:

1. **M. I. Miga**, K. D. Paulsen, F. E. Kennedy, P. J. Hoopes, A. Hartov, and D. W. Roberts, 'A 3D brain deformation model experiencing comparable surgical loads', *Proceedings of the 19th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, pp. 773-776, 1997.

2. **M. I. Miga**, K. D. Paulsen, F. E. Kennedy, P. J. Hoopes, A. Hartov, and D. W. Roberts, 'Modeling surgical loads to account for subsurface tissue deformation during stereotactic neurosurgery', *IEEE SPIE Proceedings of Laser-Tissue Interaction IX, Part B: Soft-tissue Modeling*, Vol. 3254, pp. 501-511, 1998.

3. **M. I. Miga**, K. D. Paulsen, F. E. Kennedy, P. J. Hoopes, A. Hartov, and D. W. Roberts, 'Quantification of a 3D brain deformation model experiencing a temporal mass expansion', *Proceedings of the 24th IEEE Northeast Bioengineering Conference*, pp. 68-71, 1998.

4. E. E. W. Van Houten, K. D. Paulsen, **M. I. Miga**, F. E. Kennedy, J. B. Weaver, 'A sweeping subzone nonlinear inversion scheme for viscoelastic tissue properties', *Medical Imaging 2000: Image Processing, Proceedings of the SPIE*, Vol. 3979, pp. 556-563, 2000.

5. **M. I. Miga**, J. M. Fitzpatrick, R. L. Galloway Jr., K. D. Paulsen, 'Incorporation of surface-based deformations for updating images intraoperatively', *Medical Imaging 2001: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE*, Vol. 4319, pp.169-178, 2001.

6. K. D. Paulsen, **M. I. Miga**, D. W. Roberts, F. E. Kennedy, L. A. Platenik, K. E. Lunn, A. Hartov, 'Finite element modeling of tissue retraction and resection for preoperative neuroimage compensation concurrent with surgery', *Medical Imaging 2001: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE*, Vol. 4319, pp. 13-21, 2001.

7. L. A. Platenik, **M. I. Miga**, D. W. Roberts, F. E. Kennedy, A. Hartov, K. E. Lunn, K. D. Paulsen, 'In vivo comparison of an incremental vs. single-step retraction model for intraoperative compensation', *Medical Imaging 2001: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE*, Vol. 4319, pp. 358-365, 2001.

8. K. E. Lunn, A. Hartov, F. E. Kennedy, **M. I. Miga**, D. W. Roberts, L. A. Platenik, K. D. Paulsen, 'Intraoperative ultrasound as sparse data for brain deformation modeling', *Medical Imaging 2001: Ultrasonic Imaging and Signal Processing: Proc. of the SPIE*, Vol. 4325, pp. 326-332, 2001.
9. **M. I. Miga**, 'A new approach to elastographic imaging: Modality independent elastography', *Medical Imaging 2002: Image Processing: Image Processing: Proc. of the SPIE*, Vol. 4684, Part 1, pp. 604-611, 2002.
10. D. M. Cash, T. K. Sinha, W. Chapman, R. L. Galloway Jr., **M. I. Miga**, 'Fast, Accurate Surface Acquisition Using a Laser Range Scanner for Image-Guided Liver Surgery', *Medical Imaging 2002: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE*, Vol. 4681, pp. 100-110, 2002.
11. T. K. Sinha, D. M. Cash, R. J. Weil, R. L. Galloway, **M. I. Miga**, 'Textured laser range scanning and registration of the cortical surface', *Proceedings of the Second Joint EMBS/BMES Conference*, pp.1183-1184, October 23-26, 2002.
12. B. K. Lamprich and **M. I. Miga**, 'Analysis of model-updated MR images to correct for brain deformation due to tissue retraction', *Medical Imaging 2003: Visualization, Image-guided Procedures and Display: Proc. of the SPIE*, Vol. 5029, pp. 552-560, 2003.
13. **M. I. Miga**, D. M. Cash, Z. Cao, R. L. Galloway, B. Dawant, W. C. Chapman, 'Intraoperative registration of the liver for image-guided surgery using laser range scanning and deformable models', *Medical Imaging 2003: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 5029, pp. 350-359, 2003.
14. T. K. Sinha, D. M. Cash, R. J. Weil, R. L. Galloway, **M. I. Miga**, 'Laser range scanning for cortical surface characterization during neurosurgery', *Medical Imaging 2003: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 5029, pp. 98-107, 2003.
15. D. M. Cash, T. K. Sinha, R. L. Galloway, W. C. Chapman, H. Terawaki, **M. I. Miga**, 'Incorporation of a laser range scanner into an image-guided surgical system', *Medical Imaging 2003: Visualization, Image-guided Procedures and Display: Proc. of the SPIE*, Vol. 5029, pp.269-280, 2003.
16. C. W. Washington, and **M. I. Miga**, 'Modality Independent Elastography: Preliminary Results', *Medical Imaging 2003: Image Processing: Proc. of the SPIE*, Vol. 5370, pp. 1380-1387, 2004.
17. M. P. Rothney, C. W. Washington, and **M. I. Miga**, 'Evaluation of a Similarity-Based Elastography Technique using Four Similarity Metrics', *2004 IEEE International Symposium on Biomedical Imaging: From Nano to Macro*, pp. 696-699, 4/2004.
18. D. M. Cash, T. K. Sinha, C. C. Chen, B. M. Dawant, W. C. Chapman, **M. I. Miga**, R. L. Galloway, 'Identification of deformation using invariant surface information', *Medical*

Imaging 2004: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE, Vol. 5029, pp. 269-280, 2004.

19. P. Dumpuri, T. K. Sinha, and **M. I. Miga**, 'Intraoperative registration for cortical surface characterization', *Vanderbilt University Institute of Imaging Science Research Retreat*, June 12-14, 2005.

20. J. J. Ou, S. L. Barnes, and **M. I. Miga**, 'Evaluating dermoscopic applications for modality independent elastography', *Vanderbilt University Institute of Imaging Science Research Retreat*, June 12-14, 2005.

21. L. W. Clements, D. M. Cash, W. C. Chapman, R. L. Galloway, and **M. I. Miga**, 'Robust surface registration using salient anatomical features in image-guided liver surgery', *Medical Imaging 2006: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6141, 2006.

22. C. R. Chen, **M. I. Miga**, and R. L. Galloway, 'Optimizing needle placement in radiofrequency ablation treatment planning', *Medical Imaging 2006: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6141, 2006.

23. P. Dumpuri, R. C. Thompson, T. K. Sinha, **M. I. Miga**, 'Automated brain shift correction using a pre-computed deformation atlas', *Medical Imaging 2006: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6141, 2006.

24. D. R. Schuler III, J. J. Ou, S. L. Barnes, and **M. I. Miga**, 'Automatic surface correspondence methods for a deformed breast', *Medical Imaging 2006: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6141, 2006.

25. T. K. Sinha, and **M. I. Miga**, 'Investigation of a block matching algorithm for determining spatial constraints in morphometric analysis', *Medical Imaging 2006: Physiology, Function and Structure from Medical Images: Proc. of the SPIE*, Vol. 6143, 2006.

26. J. J. Ou, S. L. Barnes, and **M. I. Miga**, 'Application of Multi-resolution Modality Independent Elastography for Detection of Multiple Anomalous Objects', *Medical Imaging 2006: Physiology, Function and Structure from Medical Images: Proc. of the SPIE*, Vol. 6143, 2006.

27. J. J. Ou, S. L. Barnes, and **M. I. Miga**, 'Preliminary testing of sensitivity to input data quality in an elastographic reconstruction method', *International Symposium on Biomedical Imaging 2006*, pp. 948-951, 2006.

28. **A. Cao**, P. Dumpuri, and **M. I. Miga**, 'Tracking cortical surface deformations based on vessel structure using a laser range scanner', *2006 IEEE International Symposium on Biomedical Imaging*, pp. 522-525, 2006.

29. D. Knaus, E. Friets, J. Bieszczad, C. R. Chen, **M. I. Miga**, R. L. Galloway, D. B. Kynor, 'System for laparoscopic tissue tracking', *2006 IEEE International Symposium on Biomedical Imaging*, pp. 498-501, 2006
30. R. E. Ong, J. J. Ou, **M. I. Miga**, 'Using laplace's equation for nonrigid registration of breast surfaces', *Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6509, 2007.
31. K. H. Ha, P. Dumpuri, **M. I. Miga**, R. C. Thompson, 'Modeling surgical procedures to assist in understanding surgical approach', *Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6509, 2007.
32. J. J. Ou, R. E. Ong, **M. I. Miga**, 'An evaluation of 3D modality independent elastography robustness to boundary condition noise', *Medical Imaging 2007: Physiology, Function and Structure from Medical Images: Proc. of the SPIE*, Vol. 6511, 2007.
33. L. W. Clements, W. C. Chapman, R. L. Galloway, **M. I. Miga**, 'Improved deformation compensation in image-guided liver surgery using salient feature-based surface registration', *Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6509, 2007.
34. J. Bieszczad, E. M. Friets, D. A. Knaus, T. P. Rauth, **M. I. Miga**, R. L. Galloway, 'Image-guided ex-vivo targeting accuracy using a laparoscopic tissue localization system', *Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6509, 2007.
35. **M. I. Miga**, J. J. Ou, D. L. Ellis, 'An elastography framework for use in dermoscopy', *Medical Imaging 2007: Physiology, Function and Structure from Medical Images: Proc. of the SPIE*, Vol. 6511, 2007.
36. **A. Cao**, **M. I. Miga**, P. Dumpuri, B. M. Dawant, R. C. Thompson, 'Target error for image-to-physical space registration: preliminary results using laser scanning', *Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE*, Vol. 6509, 2007.
37. **M. I. Miga**, J. J. Ou, S. L. Barnes, A. Lyschik, J. C. Gore, 'Modality independent elastography: initial results with a murine liver fibrosis model', *6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity*, Sante Fe, New Mexico, 11/2-5/2007.
38. S. L. Barnes, A. Lyschik, J. C. Gore, **M. I. Miga**, 'Development of a mechanical assay for modulus analysis of fibrotic murine livers', *6th International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity*, Sante Fe, New Mexico, 11/2-5/2007.
39. J. A. Weis, F. Granero-Molto, L. D. O'Rear, **M. I. Miga**, A. Spagnoli, 'Development of a high-resolution 3D microCT based model to predict fracture callus histological architecture', *American Society for Bone and Mineral Research Conference*, 6/2007.

40. F. Granero-Molto, J. A. Weis, L. D. O'Rear, **M. I. Miga**, A. Spagnoli, 'IGF-I engineered bone marrow mesenchymal stem cells improve the fracture healing process', *American Society for Bone and Mineral Research Conference*, 6/2007.
41. S. Ding, **M. I. Miga**, R. C. Thompson, P. Dumpuri, **A. Cao**, B. M. Dawant, 'Estimation of intra-operative brain shift using a tracked laser range scanner', 29th Annual International Conference of the *IEEE Engineering in Medicine and Biology Society*, 8/23-26, Lyon, France.
42. I. Garg, and **M. I. Miga**, 'Preliminary investigation of the inhibitory effects of mechanical stress in tumor growth', *SPIE Medical Imaging 2008: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 6918, 2008.
43. R. Ong, S. Duke Herrel, **M. I. Miga**, R. L. Galloway, 'A kidney deformation model for use in non-rigid registration during image-guided surgery', *SPIE Medical Imaging 2008: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 6918, 2008.
44. R. Ong, C. L. Glisson, S. D. Herrel, **M. I. Miga**, R. L. Galloway, 'A deformation model for non-rigid registration of the kidney', *SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7261, 2009.
45. P. Dumpuri, L. W. Clements, R. Li, J. M. Waite, J. D. Stefansic, D. A. Geller, **M. I. Miga**, B. M. Dawant, 'Comparison of pre/post-operative CT image volumes to preoperative digitization of partial hepatectomies: A feasibility study in surgical validation', *SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7261, 2009.
46. S. Ding, **M. I. Miga**, R. C. Thompson, I. Garg, B. M. Dawant, 'Automatic segmentation of cortical vessels in pre- and post- tumor resection laser range scan images', *SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7261, 2009.
47. D. Hackworth, P. Dumpuri, and **M. I. Miga**, 'A dual compute resource strategy for computational model-assisted therapeutic interventions', *SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7261, 2009.
48. I. Garg, S. Ding, A. M. Coffey, P. Dumpuri, R. C. Thompson, B. M. Dawant, **M. I. Miga**, 'Enhancement of subsurface brain shift model accuracy: a preliminary study', *SPIE Medical Imaging 2010: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7625, 2010.
49. T. S. Pheiffer, J. J. Ou, **M. I. Miga**, 'Automatic generation of boundary conditions using Demons non-rigid image registration for use in 3D modality independent elastography', *SPIE Medical Imaging 2010: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7625, 2010.

50. A. M. Coffey, **M. I. Miga**, R. C. Thompson, 'An evaluative tool for preoperative planning of brain tumor resection', *SPIE Medical Imaging 2010: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7625, 2010.
51. P. Dumpuri, L. W. Clements, B. M. Dawant, **M. I. Miga**, 'Model-updated image-guided liver surgery: preliminary results using intra-operative surface characterization', *SPIE Medical Imaging 2010: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7625, 2010.
52. **M. I. Miga**, J. A. Weis, F. Granero-Molto, A. Spagnoli, 'Quantifying mechanical properties in a murine fracture healing system using inverse modeling: preliminary work', *SPIE Medical Imaging 2010: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 7626, 2010.
53. S. L. Barnes, and **M. I. Miga**, 'Application of a Novel Soft Tissue Modulus Evaluation Assay for Breast Tumor Tissue', *BMES 2010 Annual Meeting*, Austin, Tx.
54. J. A. Weis, F. Granero-Molto, A. Spagnoli, and **M. I. Miga**, 'An Inverse FEA to Assess Bone Fracture Healing in Mice Receiving Mesenchymal Stem Cell Transplantation', *BMES 2010 Annual Meeting*, Tx.
55. F. Granero-Molto, T. J. Myers, J. A. Weis, Y. Yan, T. Li, L. Longobardi, **M. I. Miga**, A. Spagnoli, 'Mesenchyma stem cells expressing IGF-I improve fracture repair: The seed and the soil for tissue regeneration', *Endocrine Reviews*, Vol. 24, No. 3, Suppl.1, 2010.
56. **M. I. Miga**, P. Dumpuri, A. L. Simpson, J. A. Weis, and W. R. Jarnagin, 'The sparse data extrapolation problem: Strategies for soft-tissue correction for image-guided liver surgery', *SPIE 2011 Medical Imaging: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7964, 2011.
57. A. L. Simpson, B. Ma, R. E. Ellis, A. J. Stewart, and **M. I. Miga**, 'Uncertainty propagation and analysis of image-guided surgery', *SPIE 2011 Medical Imaging: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7964, 2011.
58. T. S. Pheiffer, B. Lennon, A. L. Simpson, and **M. I. Miga**, 'Development of a novel laser range scanner', *SPIE 2011 Medical Imaging: Visualization, Image-Guided Procedures, and Modeling Conference*, Vol. 7964, 2011.
59. M. J. Shannon, I. M. Meszoely, T. S. Pheiffer, A. L. Simpson, K. Sun, J. E. Ondrake, and **M. I. Miga**, 'Initial study of breast tissue reiteration toward image-guided breast surgery', *SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, and Modeling Conference*, Vol. 8316, 2012.
60. K. Sun, W. J. Rodriguez, S. Pallavaram, B. M. Dawant, and **M. I. Miga**, 'Optimizing the delivery of deep brain stimulation using electrophysiological atlases and an inverse modeling approach', *SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, and Modeling Conference*, Vol. 8316, 2012.

61. A. L. Simpson, J. Burgner, I. Chen, T. S. Pheiffer, K. Sun, R. C. Thompson, R. J. Webster, and **M. I. Miga**, 'Intraoperative brain resection cavity characterization with conoscopic holography', *SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, and Modeling Conference*, Vol. 8316, 2012.
62. K. E. Miller, J. E. Ondrake, T. S. Pheiffer, A. L. Simpson, and **M. I. Miga**, 'Utilizing ultrasound as a surface digitization tool in image guided liver surgery', *SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 8316, 2012.
63. P. J. Swaney, J. Burgner, T. S. Pheiffer, D. C. Rucker, H. B. Gilbert, J. E. Ondrake, A. L. Simpson, E. C. Burdette, **M. I. Miga**, and R. J. Webster, 'Tracked 3D ultrasound targeting with an active cannula', *SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 8316, 2012.
64. J. A. Weis, S. L. Barnes, T. E. Yankeelov, and **M. I. Miga**, 'Material property assessment of a murine model of triple negative breast cancer using modality independent elastography: Preliminary results', *Proceedings BMES 2012 Annual Meeting*, Atlanta, GA, 2012.
65. T. S. Pheiffer, B. C. Byram, and **M. I. Miga**, 'Monitoring surgical resection of tumors with ultrasound strain imaging', *Proc. Of the 11th International Tissue Elasticity Conference*, Deauville, France, 2012.
66. **M. I. Miga**, 'Deformation compensation strategies for image-guided surgery using sparse data', *5th National Center for Image-guided Therapy NIH Image Guided Therapy Workshop*, 9/21/2012, Boston, MA.
67. D. C. Rucker, Y. Wu, T. S. Pheiffer, A. L. Simpson, and **M. I. Miga**, 'A novel iterative approach for accounting for non-rigid deformations in image guided liver surgery using sparse surface data', *5th National Center for Image-guided Therapy NIH Image Guided Therapy Workshop*, 9/21/2012, Boston, MA.
68. T. S. Pheiffer, A. L. Simpson, J. E. Ondrake, and **M. I. Miga**, 'Geometric reconstruction using tracked ultrasound strain imaging', *SPIE 2013 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 8671, 2013.
69. J. A. Weis, T. E. Yankeelov, S. A. Munoz, R. A. Sastry, S. L. Barnes, L. R. Arlinghaus, X. Li, and **M. I. Miga**, 'A consistent pre-clinical/clinical elastography approach for assessing tumor mechanical properties in therapeutic systems', *SPIE 2013 Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 8672, 2013.
70. J. A. Weis, **M. I. Miga**, X. Li, L. R. Arlinghaus, A. B. Chakavarthy, V. Abramson, R. G. Abramson, J. Farley, and T. E. Yankeelov, 'A mechanically coupled reaction diffusion model of breast tumor response during neoadjuvant chemotherapy', *SPIE 2013 Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 8672, 2013.

71. I. Chen, A. L. Simpson, K. Sun, R. C. Thompson, and **M. I. Miga**, 'Sensitivity analysis and automation for intraoperative implementation of the atlas-based method for brain shift correction', *SPIE 2013 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 8671, 2013.
72. D. C. Rucker, Y. Wu, J. E. Ondrake, T. S. Pheiffer, A. L. Simpson, and **M. I. Miga**, 'Nonrigid liver registration for image-guided surgery using partial surface data: A novel iterative approach', *SPIE 2013 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 8671, 2013.
73. A. N. Kumar, T. S. Pheiffer, A. L. Simpson, R. C. Thompson, **M. I. Miga**, and B. M. Dawant, 'Phantom-based comparison of the accuracy of point clouds extracted from stereo cameras and laser range scanner', *SPIE 2013 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 8671, 2013.
74. Y. Wu, D. C. Rucker, R. H. Conley, T. S. Pheiffer, A. L. Simpson, S. K. Geevarghese, and **M. I. Miga**, 'Registration of liver images to minimally invasive intraoperative surface and subsurface data', *SPIE 2014 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 9036, 2014.
75. R. H. Conley, I. M. Meszoely, T. S. Pheiffer, L. W. Clements, J. A. Weis, T. E. Yankeelov, and **M. I. Miga**, 'Image to physical space registration of supine breast MRI for image guided breast surgery', *SPIE 2014 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, Vol. 9036, 2014.
76. D. K. Kim, J. A. Weis, T. E. Yankeelov, and **M. I. Miga**, 'Utilizing a reference material for assessing absolute tumor mechanical properties in modality independent elastography', *SPIE 2014 Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 9038, 2014.
77. J. A. Weis, D. K. Kim, T. E. Yankeelov, and **M. I. Miga**, 'Validation and reproducibility assessment of modality independent elastography in a pre-clinical model of breast cancer', *SPIE 2014 Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 9038, 2014.
78. A. J. Simpson, R. K. Do, E. P. Parada, **M. I. Miga**, and W. R. Jarnagin, 'Texture feature analysis for prediction of postoperative liver failure prior to surgery', *SPIE 2014 Medical Imaging: Image Processing*, Vol. 9034, 2014.
79. J. A. Weis, R. H. Conley, K. M. Flint, A. M. Searfoss, A. M. Johnsen, R. G. Abramson, and T. E. Yankeelov, and **M. I. Miga**, 'Applications in modality independent elastography (MIE)', *Frontiers in Elastography*, 2014.
80. J. A. Weis, X. Li, L. Arlinghaus, A. B. Chakravarthy, V. Abramson, J. Farley, T. E. Yankeelov, and **M. I. Miga**, 'Using elastographic data and modeling to predict the response of breast cancer to neoadjuvant chemotherapy', *Frontiers in Elastography*, 2014.

81. J. A. Weis, **M. I. Miga**, X. Li, L. Arlinghaus, A. B. Chakravarthy, V. Abramson, J. Farley, T. E. Yankeelov, 'Prediction of response to neoadjuvant chemotherapy using a mechanically coupled reaction-diffusion model', 56th Annual AAPM Meeting, Austin, TX, July 2014.*** *Selected for Science Council Session*.

82. L. W. Clements, I. Norton, A. J. Golby, R. C. Thompson, W. E. Wells and **M. I. Miga**, 'Towards validation of a model-based deformation correction approach in image-guided neurosurgery via intraoperative magnetic resonance imaging', *Proceedings of 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, IL, 2014.

83. A. N. Kumar, **M. I. Miga**, T. S. Pheiffer, L. B. Chambless, R. C. Thompson, and B. M. Dawant, 'Automatic tracking of intraoperative brain surface displacements in brain tumor surgery', *Proceedings of 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, IL, 2014.

84. **M. I. Miga**, 'Surgery & engineering: Computational modeling enabling therapy', *Proceedings of 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, IL, 2014.

85. **M. I. Miga**, 'Mini-symposia: Novel technology platforms for improved surgical intervention & guidance', *Proceedings of 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Chicago, IL, 2014.

86. J. A. Collins, D. B. Brown, T. P. Kingham, W. R. Jarnagin, **M. I. Miga**, and L. W. Clements, 'Method for evaluation of predictive models of microwave ablation via post-procedural clinical imaging', *SPIE 2015 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, (in press), Orlando, FL, 2015.

87. L. W. Clements, J. A. Collins, A. L. Simpson, Y. Wu, W. R. Jarnagin, and **M. I. Miga**, 'Validation of model-based deformation correction in image-guided liver surgery via tracked intraoperative ultrasound: preliminary method and results', *SPIE 2015 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, (in press), Orlando, FL, 2015.

88. J. A. Weis, A. M. Johnsen, G. E. Wile, T. E. Yankeelov, R. G. Abramson, and **M. I. Miga**, 'Development of a diaphragmatic motion-based elastography framework for assessment of liver stiffness', *SPIE 2015 Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, (in press), Orlando, FL, 2015.

89. K. M. Flint, J. A. Weis, T. E. Yankeelov, and **M. I. Miga**, 'Repeatability assessment of modality independent elastography in a pre-clinical murine model', *SPIE 2015 Medical Imaging: Biomedical Applications in Molecular, Structural, and Functional Imaging*, (in press), Orlando, FL, 2015.

90. U. Leung, A. L. Simpson, L. B. Adams, W. R. Jarnagin, **M. I. Miga**, and T. P. Kingham, 'Image guidance improves localization of sonographically occult colorectal liver metastases', *SPIE 2015 Medical Imaging: Image-Guided Procedures, Robotic Interventions*, (in press), Orlando, FL, 2015.

91. **M. I. Miga**, 'Model-assisted image guided approach for tumor resection in neurosurgery', *5th Annual International Conference in Computational Surgery*, National Institutes of Health, Washington, DC, 1/20/2015.
92. **M. I. Miga**, K. Sun, I. Chen, L. W. Clements, T. S. Pheiffer, and R. C. Thompson, 'Clinical evaluation of a model-updated image-guidance approach to brain shift compensation: experience in 16 cases', *Computer Assisted Radiology and Surgery Conference*, 2015.
93. R. H. Conley, I. M. Meszoely, J. A. Weis, T. S. Pheiffer, L. R. Arlinghaus, T. E. Yankeelov, and **M. I. Miga**, 'Realization of a biomechanical model-assisted image guidance system for breast cancer surgery using supine MRI', *Information Processing in Computer Assisted Interventions Conference*, 2015.
93. X. Yang, L. W. Clements, R. H. Conley, R. C. Thompson, B. M. Dawant, and **M. I. Miga**, 'A novel craniotomy simulation system for evaluation of stereo-pair reconstruction fidelity and tracking', *SPIE 2016 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2016.
94. R. C. Vijayan, R. H. Conley, L. W. Clements, R. C. Thompson, **M. I. Miga**, 'Determination of surgical variables using an android application for a brain shift correction pipeline used in image guided neurosurgery', *SPIE 2016 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2016.
95. J. T. Chadwell, R. H. Conley, I. M. Meszoely, and **M. I. Miga**, 'Characterization of a phantom setup for breast conserving cancer surgery', *SPIE 2016 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2016.
96. S. Narasimhan, J. A. Weis, I. Godage, R. Webster, K. Weaver, and **M. I. Miga**, 'Development of a mechanics-based model of brain deformations during intracerebral hemorrhage evacuation', *SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2017.
97. J. A. Collins, J. Heiselman, J. A. Weis, L. W. Clements, A. L. Simpson, W. R. Jarnagin, and **M. I. Miga**, 'On the nature of data collection for soft-tissue image-to-physical organ registration: A noise characterization study', *SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2017.
98. D. J. Doss, J. Heiselman, J. A. Collins, J. A. Weis, L. W. Clements, and **M. I. Miga**, 'Using an android application to assess registration strategies in open hepatic procedures: A planning and simulation tool', *SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2017.
99. R. H. Griesenauer, J. A. Weis, L. R. Arlinghaus, and **M. I. Miga**, 'Towards quantitative quasi-static elastography with a gravity-induced deformation source', *SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling*, (accepted), 2017.

100. J. S. Heiselman, J. A. Collins, J. A. Weis, L. W. Clements, A. L. Simpson, S. K. Geevarghese, W. R. Jarnagin, and **M. I. Miga**, 'Emulation of the laparoscopic environment for image-guided liver surgery via an abdominal phantom system with anatomical ligamenture', SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling, (accepted), 2017.
101. M. Luo, S. F. Frisken, J. A. Weis, L. W. Clements, P. Unadkat, R. C. Thompson, A. J. Golby, **M. I. Miga**, 'Validation of model-based brain shift correction in neurosurgery via intraoperative magnetic resonance imaging: Preliminary results', SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling, (accepted), 2017.
102. X. Yang, L. W. Clements, M. Luo, S. Narasimhan, R. C. Thompson, B. M. Dawant, and **M. I. Miga**, 'Integrated system for point cloud reconstruction and simulated brain shift validation using tracked surgical microscope', SPIE 2017 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling, (accepted), 2017.

OTHER PUBLICATIONS:

1. M. Scherer, C. Zhang, and **M. I. Miga**, *BMEPulse*, Vol. 1, No. 1, Fall 2008.
2. C. Zhang, and **M. I. Miga**, *BMEPulse*, Vol. 1, No. 2, Spring 2009.
3. C. Zhang, and **M. I. Miga**, *BMEPulse*, Vol. 2, No. 1, Fall 2009.
4. C. Zhang, and **M. I. Miga**, *BMEPulse*, Vol. 2, No. 2, Spring 2010.
5. C. Ruelens, E. Von Stein and **M. I. Miga**, *BMEPulse*, Vol. 3, No. 1, Fall 2010.
6. C. Ruelens, E. Von Stein and **M. I. Miga**, *BMEPulse*, Vol. 3, No. 2, Spring 2011.
7. E. Von Stein and **M. I. Miga**, *BMEPulse*, Vol. 4, No. 1, Fall 2011.
8. E. Von Stein and **M. I. Miga**, *BMEPulse*, Vol. 4, No. 2, Spring 2012.
9. E. Von Stein and **M. I. Miga**, *BMEPulse*, Vol. 5, No. 1, Fall 2012.
10. E. Von Stein and **M. I. Miga**, *BMEPulse*, Vol. 5, No. 2, Spring 2013
11. J. Duan and **M. I. Miga**, *BMEPulse*, Vol. 6, No. 1, Fall 2013
12. J. Duan and **M. I. Miga**, *BMEPulse*, Vol. 6, No. 2, Spring 2014
13. J. Duan, D. Black, and **M. I. Miga**, *BMEPulse*, Vol. 7, No. 1, Fall 2014
14. J. Duan, D. Black, A. Gnam, and **M. I. Miga**, *BMEPulse*, Vol. 7, No. 2, Spring 2015
15. 14. J. Duan, and **M. I. Miga**, *BMEPulse*, Vol. 8, No. 1, Spring 2016

PATENT/TECHNOLOGY TRANSFER SUBMISSIONS:

1. **M. I. Miga**, Patent Application: Elastography Imaging Modalities for Characterizing Properties of Tissue," U.S. Patent Application No. 10/787,056.
2. **M. I. Miga**, B. M. Dawant, T. K. Sinha, VU03106, Technology Transfer Application: Cortical Surface Registration and Deformation Tracking Using laser Range Scanning and Textured Point Clouds for Patient-Alignment, 6/16/2003.
3. **M. I. Miga**, P. Dumpuri, C. R. Chen VU0506, Technology Transfer Application: Brain Shift Compensation Using Computer Models, 7/22/2004.
4. **M. I. Miga**, D. M. Cash VU105 (CIP): "Method and Apparatus for Collecting and Processing Physical Space Data for Use While Performing Image Guided Surgery", 6/27/2001.

5. **M. I. Miga**, R. L. Galloway, L. W. Clements VU 0734, VU0735 – ‘Apparatus and Methods for Compensating for Organ Deformation, Apparatus and Methods for Registration of Internal Structures to Images, and Applications of Same’, 1/2008.
6. **M. I. Miga**, P. Dumpuri VU1040 - ‘A Local Stylus and/or Image Transformation Device to Correct Data for Deformations in Image-Guided Procedures’, 1/2011.
7. D. C. Rucker, and **M. I. Miga** Continuation in Part to VU1040 – ‘Enhanced Method for Correcting Data for Deformations During Image-Guided Procedures’, 12/2012.
8. **M. I. Miga**, and T. S. Pfeiffer, Provisional Patent VU 15001, ‘Method and System for Real-time Compression Correction for Tracked Ultrasound and Applications of Same’, 9/1/2015.
9. **M. I. Miga**, I. M. Meszoely, and R. H. Conley, Technology Transfer Disclosure VU15170 – ‘Image Guidance System for Breast Cancer Surgeries’, 6/9/2015.
10. **M. I. Miga**, Technology Transfer Disclosure VU 16044 - ‘Trackerless Soft Tissue Image Guidance System’, 9/29/2015.

PRESENTATIONS:

1. Invited Seminar: **M. I. Miga**, ‘Modeling surgical loads to account for subsurface tissue deformation’, Radiobiology and Bioengineering Research Program, Dartmouth Hitchcock Medical Center, Lebanon, NH, 10/22/97.
2. Poster Presentation: **M. I. Miga**, ‘A 3D brain deformation model experiencing comparable surgical loads’, 19th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Chicago, IL, 10/30/97.
3. Invited Seminar: **M. I. Miga**, ‘Engineering science at Dartmouth in the “Decade of the Brain”’, Thayer School Distinguished Fellow Seminar, Dartmouth College, Thayer School of Engineering, Hanover, NH, 5/98.
4. Conference Poster: **M. I. Miga**, ‘A 3D brain deformation model experiencing surgical loads’, 12th Annual Neuroscience Day at Dartmouth College, Dartmouth College, Hanover, NH, 1/30/98.
5. Platform Presentation: **M. I. Miga**, ‘In vivo analysis of 3D brain computations for model-updated image-guided stereotactic neurosurgery’, IEEE 24th Annual Northeast Bioengineering Conference, Hershey Medical Center, Hershey, PA, 4/9-10/1998.
6. Conference Poster: **M. I. Miga**, ‘Initial in-vivo analysis of 3D heterogeneous brain computations for model-updated image-guided neurosurgery’, First International Conference on Medical Image Computing and Computer-Assisted Intervention, Massachusetts Institute of Technology, Boston, MA, 10/11/98.

7. Invited Seminar: **M. I. Miga**, 'Brain modeling for model-updated image-guided neurosurgery', ENGS5 – Healthcare and Technology in the 21st Century, Dartmouth College, Thayer School of Engineering, Hanover, NH 4/29/98.
8. Invited Seminar: **M. I. Miga**, 'How can computational modeling improve tumor resection during neurosurgery?', Department of Diagnostic Radiology, Yale University, New Haven, CT, 7/99.
9. Conference Poster: **M. I. Miga**, 'Model-updated image-guided neurosurgery: Incorporation of the falx cerebri', 2nd International Conference on Medical Image Computing and Computer-Assisted Intervention, Cambridge University, Cambridge, England, 9/22/99.
10. Conference Poster: **M. I. Miga**, 'Model-updated image-guided neurosurgery: Preliminary analysis using intraoperative MR', 3rd International Conference on Medical Image Computing and Computer-Assisted Intervention, Pittsburgh, Pennsylvania, USA, 10/12/2000.
11. Invited Seminar: **M. I. Miga**, 'Computational modeling for image-guided therapy', Vanderbilt University, Department of Biomedical Engineering, Nashville, TN, 2/2000.
12. Platform Presentation: **M. I. Miga**, 'Incorporation of surface-based deformations for updating images intraoperatively', Medical Imaging 2001 Conference: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE, 2/18/2001.
13. Journal Club Seminar, **M. I. Miga**, 'Analysis and Advances in Biomedical Modeling', Vanderbilt University, Department of Physics, Research Group of John Wikswo, 3/2001.
14. Platform Presentation: **M. I. Miga**, 'Modality independent elastography', M. I. Miga, 5th Tennessee Conference on Biomedical Engineering, 4/2002.
15. Platform Presentation: **M. I. Miga**, 'A new approach to elastographic imaging: Modality independent elastography', Medical Imaging 2002 Conference: Image Processing: Proc. of the SPIE, 2/24/2002.
16. Invited Seminar: **M. I. Miga**, 'Advances in Image-Guided Therapy', Guest lecture in *BME 318: Principles and Applications in Magnetic Resonance Imaging* (taught by Dr. Cynthia Paschal), Vanderbilt University, Department of Biomedical Engineering, 4/2002.
17. Platform Presentation: **M. I. Miga**, 'Textured laser range scanning and registration of the cortical surface', 24th Annual International Joint Conference of EMBS and BMES, 10/26/2002.
18. Invited Seminar: **M. I. Miga**, 'New Roles for Computational Modeling in Biomedicine', Vanderbilt University, Department of Psychology, 1/23/2003.
19. Platform Presentation: **M. I. Miga**, 'Intraoperative registration of the liver for image-guided surgery using laser range scanning and deformable models', Medical Imaging

2003: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE, 2/18/2003.

20. Poster Presentation: **M. I. Miga**, 'Analysis of model-updated MR images to correct for brain deformation due to tissue retraction', Medical Imaging 2003: Visualization, Display, and Image-guided Procedures: Proc. of the SPIE, 2/18/2003 (1st place Cum Laude Award).

21. Invited Seminar: **M. I. Miga**, 'Model-based Imaging Methods', Guest lecture for Vanderbilt University Institute of Imaging Science Seminar, 9/26/2003.

22. Invited Seminar Series: **M. I. Miga**, 'Biomechanical Modeling for Image Registration: Applications in Image-Guided Neurosurgery: Part I', and, 'Biomechanical Modeling for Image Registration: Applications in Image-Guided Neurosurgery: Part II', Guest lecturer for CS 395: *Medical Image Registration* (taught by Dr. J. Michael Fitzpatrick), Vanderbilt University, Department of Electrical Engineering, 12/9/2003, and 12/11/2003.

23. Poster Presentation: **M. I. Miga**, 'Modality Independent Elastography: Preliminary Results', Medical Imaging 2003: Image Processing: Proc. of the SPIE, 2/18/2004.

24. Invited Seminar: **M. I. Miga**, 'New Roles for Computational Modeling in Biomedicine', Guest lecture for University of Alabama, Department of Chemical and Bioengineering, Tuscaloosa, AL, 3/11/2004.

25. Poster Presentation: Megan P. Rothney, and **M. I. Miga**, 'Evaluation of a Similarity-Based Elastography Technique using Four Similarity Metrics', 2004 IEEE International Symposium on Biomedical Imaging: From Nano to Macro, 4/16/2004.

26. SPIE Medical Imaging 2006: Short Course on Image-Guided Procedures and Computer Aided Surgery: R. L. Galloway, K. Cleary, K. Wong, F. Banovac, **M. I. Miga**

27. Poster Presentation: C. R. Chen, **M. I. Miga**, and R. L. Galloway, 'Optimizing needle placement in radiofrequency ablation treatment planning', Medical Imaging 2006: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE, 2/11-16/2006.

28. Poster Presentation: D. R. Schuler III, J. J. Ou, and **M. I. Miga**, 'Automatic surface correspondence methods for a deformed breast', Medical Imaging 2006: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE, 2/11-16/2006.

29. Poster Presentation: T. K. Sinha, and **M. I. Miga**, 'Investigation of a block matching algorithm for determining spatial constraints in morphometric analysis', Medical Imaging 2006: Physiology, Function and Structure from Medical Images: Proc. of the SPIE, 2/11-16/2006.

30. Poster Presentation: J. J. Ou, S. L. Barnes, and **M. I. Miga**, 'Preliminary testing of sensitivity to input data quality in an elastographic reconstruction method', International Symposium on Biomedical Imaging 2006, Washington, D.C., 4/6/2006.

31. Poster Presentation: A. Cao, and **M. I. Miga**, 'Tracking cortical surface deformations based on vessel structure using a laser range scanner', International Symposium on Biomedical Imaging 2006, Washington, D.C., 4/6/2006.
32. Poster Presentation: D. Knaus, **M. I. Miga**, 'Tracking cortical surface deformations based on vessel structure using a laser range scanner', International Symposium on Biomedical Imaging 2006, Washington, D.C., 4/6/2006.
33. Invited Seminar: **M. I. Miga**, 'Augmenting dermoscopy with elastography: Preliminary work', Melanoma Seminar Series, Vanderbilt University, 2006.
34. Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2007: Visualization, Image-guided Procedures, and Display.
35. Platform Presentation: **M. I. Miga**, 'An elastography framework for use in dermoscopy', Medical Imaging 2007: Physiology, Function and Structure from Medical Images, 2007.
36. Poster Presentation: R. E. Ong, **M. I. Miga**, 'Using laplace's equation for nonrigid registration of breast surfaces', Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE, 2007.
37. Poster Presentation: K. H. Ha, **M. I. Miga**, 'Modeling surgical procedures to assist in understanding surgical approach', Medical Imaging 2007: Visualization, Image-guided Procedures, and Display: Proc. of the SPIE, 2007.
38. Poster Presentation: **M. I. Miga**, 'An evaluation of 3D modality independent elastography robustness to boundary condition noise', Medical Imaging 2007: Physiology, Function and Structure from Medical Images: Proc. of the SPIE, 2007.
39. Poster Presentation: I. Garg, and **M. I. Miga**, 'Preliminary investigation of the inhibitory effects of mechanical stress in tumor growth', SPIE Medical Imaging 2008: Visualization, Image-Guided Procedures, and Modeling Conference, Vol. 6918, 2008.
40. Workshop Presentation: **M. I. Miga**, 'The changing roles for soft-tissue modeling: Therapy guidance, imaging, and characterization', Medical Imaging 2008: Visualization, Image-guided Procedures, and Display.
41. Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2008: Visualization, Image-guided Procedures, and Display.
42. Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2009: Visualization, Image-guided Procedures, and Display.
43. Workshop Platform Presentation: J. B. Weaver, M. M. Dooley, M. F. Insana, A. Manduca, **M. I. Miga**, K. J. Parker, and K. D. Paulsen, 'Elastography Directions and Applications for Ultrasound and MR Palpation Workshop', SPIE 2009 Workshop for Biomedical Applications in Molecular, Structural, and Functional Imaging Conference.

44. Poster Presentation: P. Dumpuri, L. W. Clements, R. Li, J. M. Waite, J. D. Stefansic, D. A. Geller, **M. I. Miga**, B. M. Dawant, 'Comparison of pre/post-operative CT image volumes to preoperative digitization of partial hepatectomies: A feasibility study in surgical validation', SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference, 2009.
45. Poster Presentation: D. Hackworth, P. Dumpuri, and **M. I. Miga**, 'A dual compute resource strategy for computational model-assisted therapeutic interventions', SPIE Medical Imaging 2009: Visualization, Image-Guided Procedures, and Modeling Conference, 2009.
46. Short Course: **M. I. Miga**, 'An introduction to finite elements for medical imaging', Medical Imaging 2010: Visualization, Image-guided Procedures, and Display.
47. Platform Presentation: **M. I. Miga**, 'Quantifying mechanical properties in a murine fracture healing system using an inverse geometric nonlinear elasticity modeling framework', 5th International Symposium on Biomedical Simulation, 2/ 2010
48. Platform Presentation: **M. I. Miga**, 'Quantifying mechanical properties in a murine fracture healing system using an inverse geometric nonlinear elasticity modeling framework', 5th International Symposium on Biomedical Simulation, Phoenix, AZ 2/ 2010.
50. Platform Presentation: **M. I. Miga**, 'Quantifying mechanical properties in a murine fracture healing system using inverse modeling: preliminary work', SPIE Medical Imaging 2010: Biomedical Applications in Molecular, Structural, and Functional Imaging, San Diego, CA 3/2010.
51. Platform Presentation: **M. I. Miga**, 'The sparse data extrapolation problem: Strategies for soft-tissue correction for image-guided liver surgery', SPIE 2011 Medical Imaging: Visualization, Image-Guided Procedures, and Modeling Conference, Orlando, FL 3/2011.
52. Invited Seminar: **M. I. Miga**, 'Surgery and engineering: Computation enabling therapy', University of Pennsylvania, Department of Radiology, 6/2011.
53. Invited Seminar: **M. I. Miga**, 'Surgery and engineering: Computation enabling therapy', University of Notre Dame, Department of Mechanical Engineering, 10/2011.
54. Poster Presentation: M. J. Shannon, and **M. I. Miga**, 'Initial study of breast tissue reiteration toward image-guided breast surgery', SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, and Modeling Conference, San Diego, CA, 2/2012.
55. Poster Presentation: K. Sun, and **M. I. Miga**, 'Optimizing the delivery of deep brain stimulation using electrophysiological atlases and an inverse modeling approach', SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, and Modeling Conference, San Diego, CA, 2/2012.

56. Poster Presentation: A. L. Simpson, and **M. I. Miga**, 'Intraoperative brain resection cavity characterization with conoscopic holography', SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, and Modeling Conference, San Diego, CA, 2/2012.
57. Poster Presentation: K. E. Miller, and **M. I. Miga**, 'Utilizing ultrasound as a surface digitization tool in image guided liver surgery', SPIE 2012 Medical Imaging: Image-Guided Procedures, Robotic Interventions, San Diego, CA, 2/2012.
58. Poster Presentation: **M. I. Miga**, 'Material property assessment of a murine model of triple negative breast cancer using modality independent elastography: Preliminary results', BMES 2012, Atlanta, GA, 2012.
59. Platform Presentation: **M. I. Miga**, 'Deformation compensation strategies for image-guided surgery using sparse data', 5th National Center for Image-guided Therapy NIH Image Guided Therapy Workshop, 9/21/2012, Boston, MA.
60. Poster Presentation: **M. I. Miga**, 'A novel iterative approach for accounting for non-rigid deformations in image guided liver surgery using sparse surface data', 5th National Center for Image-guided Therapy NIH Image Guided Therapy Workshop, 9/21/2012, Boston, MA.
61. Workshop Presentation: M. S. Skala, R. J. Webster, and **M. I. Miga**, 'In Our Humble Opinions (IOHO): NIH Grant Tips, Experiences, & Review', ViSE Seminar Series, 6/2013.
62. Workshop Presentation: Mock Study Section, NIH Study Section: Understanding the NIH Peer Review System Relative When Competing for Grant Awards (Rosen, Gill), **Chair: M. I. Miga**, 2014.
63. Invited Seminar: **M. I. Miga**, 'Soft Tissue Image-Guided Surgery: Computational Modeling Enabling Therapy', Brigham and Women's Hospital, National Center for Image-Guided Therapy, Boston, MA, August 2014.
64. Invited Seminar: **M. I. Miga**, 'Soft Tissue Image-Guided Surgery: Computational Modeling Enabling Therapy', Analogic Inc., Peabody, MA, August 2014.
65. Invited Seminar: **M. I. Miga**, 'Biophysical Model-Embedded Systems for Therapeutic and Imaging Applications', Vanderbilt University Institute for Imaging Science, Nashville, TN, October 2014.
66. Platform Seminar: **M. I. Miga**, 'Model-assisted image guided approach for tumor resection in neurosurgery', *5th Annual International Conference in Computational Surgery*, National Institutes of Health, Washington, DC, 1/20/2015.
67. Invited Seminar: **M. I. Miga**, 'Computational modeling enabling therapy: Translational engineering for surgery', Worcester Polytechnic Institute, Worcester, MA, 4/2015.

68. Invited Seminar: **M. I. Miga**, 'Computational Modeling Enabling Therapy', Vanderbilt Program in Research Administration Development (VPRAD), 4/22/2015.

69. Invited Seminar: **M. I. Miga**, 'The Vanderbilt Institute in Surgery and Engineering: A Team Science Case', Supporting Team Science at Vanderbilt Workshop, 9/25/2015.

70. Poster Presentation: **M. I. Miga**, 'Characterization of a phantom setup for breast conserving cancer surgery', SPIE 2016 Medical Imaging: Image-guided Procedures, Robotic Interventions, and Modeling Conference, San Diego, CA, 2/28/2016.

70. Invited Seminar: **M. I. Miga**, 'Engineering for Surgery and Intervention: A Framework in Translation', Columbia University, 4/1/2016.

71. Invited Seminar: **M. I. Miga**, 'Bringing New Technology into the Interventional Radiology Suite: Integration vs Workflow', Vanderbilt Institute for Surgery and Engineering, 4/14/2016.

72. Invited Seminar: **M. I. Miga**, 'Engineering for Surgery & Intervention: A Framework in Translation', Dartmouth College, 5/20/2016.

GENERAL PUBLIC PRESENTATIONS:

1. Special Feature Article: Stuart M. Hutson, 'Laser range scanner helps surgeons navigate: Imaging technique moves from guiding neurosurgery to the liver', *Biophotonics International*, pp. 52-53, June 2002.

2. Special Feature News Story: Amy Marsalis, 'Laser-guided brain surgery', Medical Breakthroughs with Amy Marsalis: News Channel 5, 7/11/2002.

3. B. Snyder, 'Piercing the body with precision: Guiding the Scalpel', *Lens Magazine*, pp.5-7, 2006.

4. J. Johnston, 'Strategic strengths', *Vanderbilt Engineering Magazine* (cover page), Fall 2009.

5. B. Synder, 'Grant bolsters liver tumor surgery techniques', *Vanderbilt Reporter*, 8/25/2011.

6. Fernanda Barros, 'Interview on Model-Updated Image-Guided Liver Surgery', Ivanhoe Broadcast News, Fall 2011.