

CURRICULUM VITAE

Robert Lee Galloway, Jr., Ph.D.

Current Position: Professor of Biomedical Engineering
Vanderbilt University School of Engineering
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Memberships: American Association for the Advancement of Science
American Society for Lasers in Surgery and Medicine
American Society for Stereotactic and Functional Neurosurgery
Biomedical Engineering Society
IEEE-Engineering in Medicine and Biology Society
Sigma Xi - The Scientific Research Society
SPIE - The International Society for Optical Engineering
World Society for Stereotactic and Functional Neurosurgery

Education:	Duke University, B.S.E., 1977	Biomedical Engineering.
	University of Virginia, M.E., 1979	Biomedical Engineering.
	Duke University, Ph.D., 1983	Biomedical Engineering.

Professional Experience:

Associate Professor of Biomedical Engineering, Vanderbilt University 1993-2000
Assistant Professor of Biomedical Engineering, Assistant Professor of Neurological Surgery, Vanderbilt University, 1988-1993.
Research Assistant Professor of Electrical and Biomedical Engineering, School of Engineering, Vanderbilt University. 1987-1988.
Research Fellow, School of Medicine, Vanderbilt University School of Medicine. 1985-1986.
Research Assistant Professor of Biomedical Engineering and Adjunct Assistant Professor of Electrical Engineering, Duke University, Durham, North Carolina, 1984-1985.
Project Engineer, Neonatal Intensive Care Unit, Virginia Baptist Hospital, Lynchburg, Virginia, 1978-1979.

Dissertation:

Galloway, Jr., R.L. A trimodal parallel processing system for speckle reduction in B-mode ultrasound images. Ph.D. dissertation, Duke University, Durham, North Carolina, 1983.

Patents:

T.R. Harris and R.L. Galloway. A method of measuring lung vascular function and transcapillary transport by the use of nonradioactive markers. Patent Number 4,874,948.

G.S. Allen, R.L. Galloway, R.J. Maciunas, C.A. Edwards, M.R. Zink. Interactive, Image-Guided Surgical System. Patent Number 5,142,930.

G.S. Allen, R.L. Galloway, R.J. Maciunas, C.A. Edwards, M.R. Zink. Interactive, Image-Guided Surgical System. European Patent #94112627.8.

J.T. Lewis, R.L. Galloway. Automated Ultrasound Localization of Targets Implanted in a Portion of the Anatomy. Patent #5,394,875, March 7, 1995.

W.A. Bass, R.L. Galloway, C.R. Maurer and R.J. Maciunas. Apparatus for Bone Surface-Based Registration of Physical Space With Tomographic Images and For Guiding a Probe Relative to Anatomical Sites In the Image. Patent #6,106,464, August 24, 2000.

R.L. Galloway, W.C. Chapman, JD Stefansic, AJ Herline. Method and Apparatus for Collecting and Processing Physical Space Data for Use While Performing Image-Guided Surgery. VU0105. In process, 2001

Awards:

Vanderbilt University School of Engineering Teaching Award, 2003

Mortar Board (Senior Honor Society) Professor of the Year Award, 1998.

Vanderbilt Engineering Research Award. 1992-1993.

The Madison Sarratt Prize for Excellence in Undergraduate Teaching. 1992.

Engineering Council Professor of the Year Award. 1989-1990.

Tau Beta Pi Award for Teaching Excellence. 1987-1988.

National Research Service Award. Jan. 1985-June 1986

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3. Whelan HT, Pledger WJ, Maciunas RJ, Galloway RL, Whetsell WO, Moses HL. The Role of Growth Factors in the Tumorigenicity of a Brain Tumor Cell Line. *Pediatric Neurology*. Vol. 5, No 5, Sept-Oct 1989. pp. 271-279.
4. Maciunas RJ, Galloway RL. Magnetic Resonance and Computed Tomographic Image-Directed Stereotaxy for Animal Research. *Stereotactic and Functional Neurosurgery*. Vol. 53. No.3, 1989, pp. 197-201.
5. Galloway RL, Maciunas RJ, Failing AL, Whelan HT. Volumetric Measurement Of Canine Gliomas Using MRI. *Magnetic Resonance Imaging*. Vol. 8, No 3., 1990. pp.161-165.
6. Galloway RL, Maciunas RJ. Stereotactic Neurosurgery *CRC Critical Reviews in Biomedical Engineering*. Vol. 18, No. 3, Nov. 1990. pp. 181-205.
7. Galloway RL, Maciunas RJ, Latimer JW. The Accuracies of Four Stereotactic Frame Systems: An Independent Assessment. *Biomedical Instrumentation & Technology*, Vol. 25, No. 6, Nov/Dec 1991 pp.457-460.
8. Maciunas RJ, Galloway RL, Fitzpatrick JM, Mandava VR, Edwards CA, Allen GS. A Universal System for Interactive, Image-Directed Neurosurgery, *Stereotactic and Functional Neurosurgery*, Vol. 58, No.1-4, 1992, pp. 103-107.
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11. Schreiner S, Galloway RL. A Fast Maximum-Intensity Projection Algorithm for Generating Magnetic Resonance Angiograms. *IEEE-Transactions for Medical Imaging*. Vol. 12, No. 1, March 1993, pp. 50-57.
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 14. Edwards CA, Galloway RL. A Single Point Calibration Technique for a Six Degree of Freedom Articulated Arm. *International Journal of Robotics Research*. Vol. 13, No.3 June 1994, pp. 189-198.
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16. Stefansic JD, Herline AJ, Chapman WC and Galloway RL, Endoscopic Tracking in Interactive, Image-Guided Surgery. *Medical Imaging* Vol. 3335, 1998 pp. 208-218.
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28. Miga MI, Fitzpatrick JM, Galloway RL, Paulsen KD. Incorporation of Surface-Based Deformation for Updating Images Intraoperatively. SPIE Medical Imaging. 2001 Volume 4319 p 169-178.
29. Cash DM, Hartmann SL, Galloway RL. Surgically Appropriate Maximum Intensity Projection: Quantization of Vessel Depiction and Incorporation Into Surgical Navigation. SPIE Medical Imaging 2001 Volume 4319 p 221-230
30. Cash David M, Tuhin Sinha, William Chapman, Robert Galloway, Michael Miga. "Fast, Accurate Surface Acquisition Using a Laser Range Scanner for Image-Guided Liver Surgery". SPIE Medical Imaging Vol 4681 pp 100-110.

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Book Chapters:

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2. Galloway RL and Maciunas RJ. "An Articulated Localizing Arm for Neurosurgical Use", in *Interactive, Image-Guided Neurosurgery*, R.J. Maciunas, ed. Williams and Wilkins, 1993. pp. 159-168.
3. Galloway RL, Berger MS, Bass WA and Maciunas RJ "Registered Intraoperative Information: Electrophysiology, Ultrasound and Endoscopy", in *Interactive, Image-Guided Neurosurgery*, R.J. Maciunas, ed. Williams and Wilkins, 1993. pp. 247-258.
4. Maciunas RJ, Fitzpatrick JM, Galloway RL, Allen GS "Beyond Stereotaxy: Extreme Levels of Application Accuracy are Provided by Implantable Fiducial Markers for Interactive, Image Guided Neurosurgery" in *Interactive, Image-Guided Neurosurgery*, R.J. Maciunas, ed. Williams and Wilkins, 1993. pp. 261-270.
5. Galloway RL "Background of Frameless Systems", in *Textbook of Stereotactic and Functional Neurosurgery*, P.L. Gildenberg and R.R. Tasker, eds. McGraw-Hill., New York, 1998 pp. 177-182.
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9. Maciunas RJ, Galloway RL. "Interactive, Image-Guided Neurosurgery: Principles Applications and New Techniques" in Grossman RG, Loftus CM (eds.), *Principles of Neurosurgery*, 2nd ed., Lippincott-Raven Publishers, Philadelphia. Jan 1999. pp 709-721.

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Conference Abstracts and Proceedings:

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2. Carroll, F., Jacobson, S., Galloway, R., Collins, J. Multilevel gated physiologic synchronization for evaluation of signal intensity, proton density, T1 and T2 gradients in lung. *Radiology* 157:335, 1985.
3. Galloway, Jr., RL, Collins, JC. PIPER--An interactive MRI analysis program. *Federation Proceedings* 45(3):169, 1986.
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31. Maciunas RJ, Galloway RL, Mandava VR, Edwards CA, Fitzpatrick JM, Allen GS. A Universal System for Interactive Image-Guided Cranial Base Surgery, North American Skull Base Society,, Orlando, February 27, 1991.
32. Galloway R, Edwards C, Mandava V, Maciunas R, An Intraoperative Workstation for Interactive, Image-Guided Neurosurgery. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society., Vol. 13, pp. 1169, 1991.
33. Mandava V, Maciunas R, Fitzpatrick M, Galloway R, Maurer C. A Workstation Platform for Stereotactic Neurosurgical Planning. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Vol. 13. pp. 1220. 1991.
34. Olson LE, Galloway RL, Harris TR. Realtime Assessment of Lung Microvascular Permeability: Use of a CO₂ Laser Aids Measurement of 1,2-Propanediol Concentration. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Vol. 13, pp. 281. 1991.
35. Galloway RL, Edwards CA, Maciunas RJ. Interactive, Image-Guided Surgery, Annals of Biomedical Engineering, Vol. 19, No. 5, 1991, pp. 615.
36. Maciunas RJ, Galloway RL, Latimer J, Cobb C, Zacharias E, Mandava VR, An Independent Application Accuracy Evaluation of Stereotactic Frame Systems, Presented: American Society for Stereotactic and Functional Neurosurgery, Pittsburgh, PA., June 16-19, 1991
37. Maciunas RJ, Galloway RL, Fitzpatrick JM, Mandava VR, Edwards CA, Allen GS. A Universal System for Interactive Image-Directed Neurosurgery, Presented: American Society for Stereotactic

Galloway, Robert L., Jr., Ph.D. (Continued)

and Functional Neurosurgery, Pittsburgh, PA., June 16-19, 1991.

38. Galloway RL, Lewis JT, Schreiner S, Stanley T, Maciunas R. A New Device for Interactive, Image-Guided Surgery. Presented: Annual Conference of the BMES, October, 1992.
39. Olson L, Pou A, Syed-Ahmed N, Galloway R, Harris T. The Linearity of Sensors for Optical Multiple Indicator Dilution Traces In Vivo and In Vitro. Presented: Annual Conference of the BMES, October, 1992.
40. Lewis JT, Galloway RL A-Mode Ultrasonic Detection of Subcutaneous Fiducial Markers for Image - Physical Space Registration, Presented: The Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Nov 1992. 3rd Place Student Paper Competition.
41. Galloway R. Advances in Neurosurgical Laser Techniques. Lasers in Surgery and Medicine. Suppl. 5. p.42, 1993.
42. Galloway R, Noonan H, Maciunas R. An Interactive, Image-Guided System for a Free-Electron Laser (FEL). Lasers in Surgery and Medicine. Suppl. 5. p.24, 1993.
43. Olson L, Pou A, Syed-Ahmed N, Galloway R, Harris T. On-Line, Optical Measurement of Lung Permeability-Surface Area (PS) is Sensitive to Hypoxia and Alloxan Injury. FASEB J. 7(3); A2924, 1993.
44. Maciunas RJ, Galloway RL, Fitzpatrick JM, Allen GS. Neurosurgical Navigation Using Implantable Fiducial Markers. Presented: Congress of Neurological Surgeons, October 1993.
45. Galloway RL, Maciunas RJ, Bass WA, Crouch, D. An Optical Device For Interactive, Image-Guided Neurosurgery. Proceedings of the 15th International Conference of the IEEE-EMBS. p.952-953, 1993.
46. Lewis JT, Galloway RL. Three-Dimensional Localization of Implanted Fiducial Markers For Interactive, Image-Guided Surgery. Proceedings of the 15th International Conference of the IEEE-EMBS. p.952-953, 1993.
47. Olson LE, DeMarino S, Pou A, Galloway RL, Harris TR. Optical Indicator Dilution Measurement of Lung Permeability-Surface Area (PS) is Equivalent to Radioisotope PS after Alloxan Injury in the Dog. Annals of Biomedical Engineering, Abstract Supplement, p 37, 1993.
48. Maciunas RJ, Galloway RL, Fitzpatrick JM, Allen GS. Neurosurgical Navigation Using Implantable Fiducial Markers Presented: Congress of Neurological Surgeons, October 1993.
49. Maciunas RJ, Fitzpatrick JM, Galloway RL, Allen GS. Precise Image-Guided Neurosurgery Using Implantable Fiducial Markers, Presented 1994, American Association of Neurological Surgeons, April 1994.

Galloway, Robert L., Jr., Ph.D. (Continued)

50. Maciunas RJ, Fitzpatrick JM, Galloway RL, Maurer C, Gadamsetty S, Latimer JW, Allen GS. Comparison of the accuracy of stereotactic frame and implantable fiducial marker-based guidance system for use in skull-based surgery. North American Skull Base Society Meeting, Feb 19-23, 1994.
51. Maciunas RJ, Fitzpatrick JM, Galloway RL, Allen GS. Interactive, Image-Guided Neurosurgery Using Implantable Fiducial Markers, Fourth Annual Course on Minimally Invasive Therapy of the Brain, August 25-27, 1994.
52. Maurer CR, Fitzpatrick JM, Galloway RL, Wang MY, Maciunas RJ, Allen GS. The Accuracy of Image-Guided Neurosurgery Using Implantable Fiducial Markers. In: H. U. Lemke, K. Inamura, C. C. Jaffe, and M. W. Vannier, ed. *Computer Assisted Radiology 1995*. Berlin: Springer-Verlag, 1995. pp. 1197-1202. (Presented at CAR '95, Berlin, June 21-24, 1995.)
53. Bass WA, Galloway RL, Paschal CB. Angiographic Images in Interactive, Image-Guided Neurosurgery, *Proceeding of the IEEE-EMBS*, 1995. p.593-594
54. Bass WA, Dawant BM, Maciunas RJ, Galloway RL. Combining Intraoperative Functional Mapping with Interactive, Image-Guided Neurosurgery, *Proceeding of the IEEE-EMBS*, 1996. p.602-603
55. Maciunas RJ, Konrad PL, Galloway RL, Jr., Fitzpatrick JM, Allen GS: Radical glial tumor resection using a spatially registered intraoperative cortical mapping technique. CAS: New Applications, Linz, Austria, September 1-5, 1997
56. Gore RK, Galloway RL, Jr., Maciunas RJ, Dawant BM: Fusion of anatomic and electrophysiologic information during image-guided neurosurgery. CAS: New applications, Linz, Austria, September 1-5, 1997
57. Maciunas RJ, Maurer CR, Fitzpatrick JM, Wang MY, Galloway RL, Jr., Gadamsetty S, Berger MS, Copeland B, Mayberg MR, Selker RG, Allen GS: Implantable fiducial markers to guide neurosurgery. CAS: New Applications, Linz, Austria, September 1-5, 1997
58. Galloway RL, Bass WA, Palmisano MG, Cash DM. Incorporation of MRA and CTA into Image-Guided Surgery. *Annals of Biomedical Engineering* Vol. 26, Supplement 1, 1998, p S-5.
59. Galloway RL, Dawant BM, Lombard KM, Gore R. Functional Mapping Integrated with Image-Guided Surgery. *Annals of Biomedical Engineering* Vol. 26, Supplement 1, 1998, p S-6.
60. Herline AJ, Stefansic JD, Debelak J, Hartmann S, Galloway RL, Pinson CW, Chapman WC. Preliminary Studies in Frameless Stereotactic Liver Surgery. Association of VA Surgeons 22nd Annual Surgical Symposium Abstracts, pg. 40, April 1998.
61. Stefansic JD, Herline AJ, Hartmann SL, Chapman WC, Galloway RL. Accuracy issues in Interactive, Image-Guided Endoscopic Surgery. Programs and Abstracts of the TN BME Conference, pg. 36, April 1998.

Galloway, Robert L., Jr., Ph.D. (Continued)

62. Chapman WC, Herline AJ, Stefansic JD, Debelak JP, Hartman S, Pinson CW, Galloway RL. New intraoperative interactive image guided technique for hepatic surgery. Western Surgical Society, Indianapolis, IN November 15-18, 1998. Awarded J. Bradley Aust Best New Member Paper Award.
63. Stefansic JD, Herline AJ, Chapman WC, Galloway RL. Interactive, Image-Guided Surgery Endoscopic Surgery. Biomedical Engineering Society, Cleveland, OH, October 14-19, 1998.
64. Herline AJ, Herring JL, Stefansic JD, Galloway RL, Dawant BM, Pinson WC, Chapman WC. Technology assisted liver surgery using image fusion. *Hepatology* 30(4): 5 Part 2 Suppl. S OCT 1999
65. Herline AJ, Stefansic JD, Debelak JP, Hartmann SL, Pinson CW, Galloway RL, Chapman WC. New Intraoperative Interactive Image-Guided Technique For Hepatic Surgery. Presented to the AHPBA February 21-25, 1999 Ft Lauderdale, FL.
66. Alan J. Herline M.D., James Stefansic M.S., Jacob Debelak M.S., Wright Pinson M.D., Robert Galloway Ph.D., William Chapman M.D. Preliminary studies in frameless, stereotactic liver surgery. Nashville Surgical Society, Nashville, TN. January 5, 1999.
67. Herline AJ, Stefansic JD, Debelak JP, Pinson CW, Galloway RL, Chapman WC. Technical Advances Toward Interactive Image-Guided Laparoscopic Surgery, Presented to SAGES 1999 March 24-27, 1999 San Antonio TX.
68. Stefansic JD, Herline AJ, Bass WA, Chapman WC, Galloway RL. Interactive Image-Guided Hepatic Surgery. Presented at the Tennessee BME Conference April 11, 1999.
69. Galloway, RL and Bass WA. Software Design for Image-Guided Surgery Presented at the Tennessee BME conference April 11, 1999.
70. Galloway RL, Bass WA, Stefansic JD, Muratore DM, Hartmann SL, Cash DM, Sinha TK. Integration of preoperative and intraoperative imaging for image-guided surgery. Presented 2000 TN-BME conference, Knoxville, TN.
71. Muratore DM, Herring JL, Dawant BM, Galloway RL. Registration of 3D tracked ultrasonic spinal images to segmented CT images for technology-guided therapy. Poster Presentation, First Place Poster Award at Tennessee Biomedical Engineering Conference
72. Harris SS, Gebhart SC, Donnelly E, Galloway RL, Towards Image-Guided Gene Therapy Delivery. IEEE-EMBS/BME Joint meeting. 2002 Houston TX p.
73. Harris SS, Hallahan D, Galloway RL, Technique for validating image-guided gene therapy, SPIE Medical Imaging 2003 San Diego, CA.
74. Poulouse B, Warmath J, Galloway R, Herline A. Design of a Rectal Model and Ultrasound Probe Registration in the Development of Novel Endorectal Image-Guided Technology. SAGES 2003

Galloway, Robert L., Jr., Ph.D. (Continued)

75. Labadie R, Fenlon M, Cevikalp H, Harris S, Galloway R, Fitzparick JM, Image-Guided Otologic Surgery. Submitted to CARS 2003.

76. Galloway R, Integration and Translation, Design of a Junior Level BME Laboratory. Submitted to BMES 2003.

77.

Invited Speaker:

"Principles Of Stereotactic Neurosurgery". Annual Conference on Stereotactic Nursing, Nashville, TN. 1990, 1991, 1992.

"Interactive, Image-Guided Surgery". Montreal Neurologic Institute, Feb 18, 1995.

Symposium on Interactive, Image-Guided Neurosurgery, American Association of Neurological Surgery. April 1995.

"3-D Imaging in Surgical Guidance", (with Terry Peters) American Association of Medical Physics, Philadelphia, PA, July 1996. Medical Physics Vol. 23, No 6. p 1122.

"Technology-Guided Therapy". Presented at the Tennessee BME conference April 11, 1999

"Image-Guided Spinal Procedures". Baltimore, MD April 19th, 1999.

1st Annual Symposium for The Centre for Vascular Imaging Research on Virtual Reality in Vascular Medicine. University of Western Ontario. October 14, 1999.

"Innovations in Technology-Guided Therapy" Greater Washington Area Society for Computer Aided Surgery (WasCas) Washington, DC, July 17, 2001.

"Advances In Technology-Guided Therapy at Vanderbilt University" CIMIT, Cambridge Mass, May 22, 2002

"Image-Guided Procedures" IEEE Summer School on Medical Imaging, Isle de Berda, Brittany, France June 16-22, 2002

"Development of Technology-Guided Therapy Systems" University of California- Davis / Lawrence Livermore National Laboratories, Sacramento California Sept 20, 2002.

Book Reviews:

"Biosensors", M. Akhtar,, F.R.S., C.R. Lowe and I.J. Higgins (Eds.) IEEE Magazine, Engineering in Medicine and Biology. Vol. 7., No. 2. June, 1988. pp. 55-56.

"Ultrasonic Bioinstrumentation", Douglas A. Christensen, IEEE Magazine, Engineering in Medicine and

Galloway, Robert L., Jr., Ph.D. (Continued)

Biology. Vol. 8., No. 1, March 1989. p.58.

"Principles of Bioinstrumentation", Richard A. Normann, IEEE Magazine, Engineering in Medicine and Biology. Vol. 8, No. 1, March 1989. p.58.

"Bioinstrumentation", Donald L. Wise, ed. IEEE Magazine, Engineering in Medicine and Biology. Vol. 10, No. 1, March 1991, pp. 82-83.

"Ultrasound in Medicine", HL Duck ed. IEEE Magazine, Engineering in Medicine and Biology, in press

PROFESSIONAL ACTIVITY

National and International

Invited Member: NIH/NSF Workshop on Image-Guided Procedures Sept 12-13, 2002

IEEE International Advisory Committee IEEE Region 10 Conference 2001 (IEEE TENCON 2001).
Singapore

IEEE - Engineering in Medicine and Biology.

Track Chair – Image-Guided Procedures Joint BMES/ EMBS Conference 2002

Vice President for Finance 1999-2001

Representative: Region 3 IEEE-EMBS Administrative Committee. 1996-1997

Member: Steering Committee for *IEEE Transactions on Medical Imaging*.

Member: IEEE-EMBS Finance Committee. 1996-2003

Track Chair: 3-D Imaging IEEE Engineering in Medicine and Biology meeting, Montreal, Sept 1995.

SPIE - The International Society for Optical Engineering

Conference Chair: Visualization, Image-Guided Procedures 2003

Conference Co-Chair: *Image-Guided Procedures* SPIE Annual Conference on Medical Imaging, 2001,2002

Member: Program Committee; SPIE Annual Conference on Medical Imaging: 1994, 1995, 1996, 1997,1998, 1999.

Chair: *Image-Guided Surgery*: SPIE Annual Conference on Medical Imaging. 1994, 1995, 1996, 1997, 1998, 1999.

Chair: *3-D Imaging*: SPIE Annual Conference on Medical Imaging. 1993.

Chair: Image Acquisition VI: SPIE Annual Conference on Medical Imaging, 1989.

Other Societies

Co-Chair: American Society for Lasers in Surgery and Medicine: Neurosurgical Section. 1992.

Co-Chair: *CT-Guided Therapy, Image-Guided Therapy* 1998 BMES annual meeting

Galloway, Robert L., Jr., Ph.D. (Continued)

Member: Biomedical Engineering Society. Student Affairs Committee. 1988-89.

Member: American Association of Stereotactic and Functional Neurosurgeons Membership Committee. 1992.

Grant Reviews

Reviewer: Natural Sciences and Engineering Research Council of Canada

Reviewer: National Science Foundation

Reviewer: NSF Graduate Research Fellowship

Reviewer: National Institutes of Health.

Reviewer: National Cancer Institute.

Reviewer: Canadian Council on Innovation

Reviewer: Ontario Challenge Fund.

Reviewer: Israel Science Foundation

Reviewer: Science & Engineering Research Council of Singapore

Journal Review

Reviewer: IEEE Transactions on Biomedical Engineering

Reviewer: IEEE Transactions on Medical Imaging.

Reviewer: IEEE Transactions on Information Technology in Biomedicine

Reviewer: IEEE Transactions on Sonics, Ultrasonics and Frequency Control

Reviewer: Medical Physics

Reviewer: Neurosurgery

Reviewer: Image-Guided Surgery

Reviewer: IEEE Engineering in Medicine and Biology Magazine

Galloway, Robert L., Jr., Ph.D. (Continued)

Service

Local

University

Member: Graduate Faculty Council 1995-1997.
Member: Graduate Faculty awards committee
Engineering Representative: VU Student Research Program 1996-1998
Member Provost's Ad hoc committee on Greek Life 1997-1999
Member Search Committee – Associate Provost for Research 1999-2000
Member: Chancellor's Committee on Graduation - 2001
Member: Simplify the Operating Process: 2000-present
Member: Chancellor's committee on honor scholarships: 2002-present

Engineering School

Chair: Engineering Security Committee
Member: Engineering Computer Committee
Chair: Engineering Student IT Subcommittee
Faculty Advisor: Engineering Council Jan 2000 - Present

Medical School

Member: Software Oversight Committee

Department

Chair: Curriculum Committee
Chair: Faculty Search Committee 1999-2000
Member: Student Laboratory Committee
Member: Graduate Admissions Evaluation Committee
Member: Departmental Honor Code Committee
Director of student computer laboratory
Faculty Advisor: Vanderbilt chapter of the Biomedical Engineering Society. Fall 1988
until Fall 1997

Galloway, Robert L., Jr., Ph.D. (Continued)

ACADEMIC RESPONSIBILITIES

Courses Taught.

1. Electrical Engineering 63. Introduction to Electrical Engineering.
Spring 1984. Duke University.
2. Electrical Engineering 112. Introduction to Electrical Engineering.
Fall 1986,1987. Vanderbilt University.
3. Electrical Engineering 200/ Physics 210. Survey of Electrical Engineering.
Spring 1985,1986,1987,1988. Vanderbilt University.
4. Electrical Engineering 213. Networks I.
Spring 1987,1988. Vanderbilt University.
5. Electrical Engineering 235. Electronics II.
Fall 1985. Vanderbilt University.

Courses Developed.(Those marked with * are still being taught by Galloway, Those marked with % are still being taught by others).

Number	Name	First Offered	Codeveloper	Status
BME 395A	Diagnostic Ultrasound	Fall 1988		
BME 272	Design of Medical Instrumentation	Spring 1989	P. King	%
BME 271.	Medical Instrumentation	Fall 1989		*
BME 316	Medical Image Analysis	Spring 1990.		*
BME 256W	Biomedical Engineering Laboratory II	Fall 1990	K.A. Overholser, R. Parker, F. Haselton, S. Alexander	%
BME 280	Biomedical Computing.	Spring 1991	R. Shiavi	
BME 258	Medical Imaging and Lasers	Spring 1997	G. Edwards	*

Galloway, Robert L., Jr., Ph.D. (Continued)

Graduate Research Supervised.

Engineering PhD:

1. Edwards, Charles A. "An Interactive, Image-Guided Surgical Device." Ph.D. Dissertation, May 1991. Committee Chair.
2. Harris, Norman. "Optical Measurements of Fluid Filtration: Verification in Semipermeable Hollow Fibers and Application to Isolated Dog Lungs". Ph.D. Dissertation. August 1991. Committee Member.
3. Mandava, Venkat. "A Method for Three Dimensional Image Registration Based on Fiducial Markers" Ph.D. Dissertation. September 1991. Committee Member.
4. Lorenz, Christine, "Quantitative Magnetic Resonance Imaging of Renal Microcirculation and Diffusion." Ph.D. Dissertation, July 1992. Committee Member.
5. Thomas, Judith G., NSF Graduate Fellow, "Ultrasonic Detection of Subcutaneous Fiducial Markers for Interactive, Image-Guided Neurosurgery" Ph.D. Dissertation, Nov, 1992. Committee Chair.
6. Olson, Lars. "An Optical Multiple Indicator Dilution Method For Measuring Lung Microvascular Permeability." Ph.D. Dissertation, June 1993. Committee Member.
7. Schreiner, Steve. "Evaluation of Errors in Magnetic Resonance Angiography." Ph.D. Dissertation, March 1994, Committee Chair.
8. Zijdenbos, Alexander P., "MRI Segmentation and the Quantification of White Matter Lesions", Ph.D. Dissertation, October, 1994. Committee Member.
9. Swain, Cassandra T., "Improving the Accuracy of Defocus-Based Depth Estimation Using Fuzzy Logic", Ph.D. Dissertation March 1995. Committee Member.
10. Beard, Brian B., "Nonimaging Radioisotope Evaluation of Left Ventricular Function", Ph.D. Dissertation, June 1995. Committee Member.
11. Klaesner, Joseph, "An Optical Measurement of Lung Filtration Coefficient" Ph.D. Dissertation, December 6, 1995. Committee Member
12. Friedli, Leeann, "Three-Dimensional Magnetic Resonance Angiography of the Pulmonary Vasculature " March 1996. Committee Member
13. Aboutanos, Georges, "Image-based deformable models for 3-D Automatic Segmentation of the Brain", May 1996, Committee Member
14. Maurer, Calvin R., "Registration of Multimodal Three-Dimensional Medical Images Using Points and/or Surfaces", August 1996 Committee Member
15. Moore, Michael S., " Model Integrated Program Synthesis for Real-Time Image Processing" December 1996, Committee Member.
16. Bishay, Magid, April 1997, Committee Member.
17. Senel, Hakan. "An Edge Preserving Smoothing Filter Using Fuzzy Topology" Ph.D. Dissertation July 18, 1997. Committee Member.
18. Gadamsetty, Srikanth. "Intersubject Registration for Functional Region Mapping". Ph.D. Dissertation, September, 1999. Chair.
19. Herring, Jeannette "Surface-Based Registration Of CT Images to Physical Space for Image-Guided Surgery of the Spine". PhD Dissertation Dec 18, 1999. Committee Member.
20. Sanders, Neal "Scoring Pain Drawings for Use in a Spine Service Automated Triage System". PhD Dissertation, March 21, 2000. Committee Member.
21. Stefansic, James. "Interactive, Image-Guided Hepatic Surgery " Ph.D. Dissertation, March 24, 2000, Chair.

Galloway, Robert L., Jr., Ph.D. (Continued)

22. Muratore, Diane "Transcutaneous Registration of Vertebrae using Tracked B-Mode Ultrasound" PhD Dissertation, Feb 15, 2002. Chair
23. Hartmann, Steve "Intraoperative Identification and Display of Functional Brain Regions" PhD Dissertation, March 8, 2002. Co-Chair
24. Ulahorn, Steven "Free Electron Laser Ablation of Soft Tissue: The Effects of Chromophore and Pulse Characteristics on Ablation Mechanics", April 9, 2002 Committee Member.
25. Bray, Mark "Visualization and Analysis of Electrodynamic Behavior During Cardiac Arrhythmias" March 21, 2003.
26. Bass, W. Andrew. " Patient-Image Registration Using A-Mode Ultrasound Localization Of Features." March 25, 2003 Committee Chair
27. Woods, Marcella " The Response of Cardiac Bidomain to Electrical Stimulation"

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Underway (Committee Chair for All)

Cash, David. "Correction for Spatial Distortions in Hepatobiliary Surgery"

Chen, Richard. "Improved Delivery of Volumetrically Constrained Therapies"

Other Committee

Chad Lieber

Engineering Masters:

1. Staton, Daniel J. "The Use of Sulfhemoglobin as a Non-radioactive Tracer of Red Cell Transport". Master's Thesis. September, 1988. Second Reader.
2. Gill, Michael. "Characterization of an X-ray-Sensitive Linear Photodiode Array for the Generation of Scanning Slit Radiographic Images" April 1991. Second Reader.
3. Schreiner, Steven. "An Improved Algorithm for Maximum Intensity Projection MR Angiography." Master's Thesis. July 1991. First Reader.
4. Stanley, Thornton. "Determination of CT-defined Tumor Margins by Combined LoG and Morphological Operators." Master's Thesis. April 1992. First Reader
5. Senel, Hakan. "Object-Oriented Structure in the Design of a Control System for Intraoperative, Image-Guided Surgical System." Master's Thesis, Mar 1993, First Reader.
6. Chen, Naidy. "3D Image Registration for MRI-Based Perfusion/Diffusion Imaging Studies of the Brain." Master's Thesis. November 1993, Second Reader.
7. Klaesner, Joseph. "The Use of Polysulfone Fibers in Optical Measurements of Plasma Protein Concentration." Master's Thesis. December 1993, Second Reader
8. Patel, Nimesh. "Computer Assisted Diagnosis of Laryngeal Disease." Master's Thesis. January 1994. Second Reader.
9. Halbertson, Sandra S. "Analysis of Fast Spin-Echo Magnetic Resonance Imaging and Spiral Computed Tomography Signals from Atherosclerotic Plaque Components and Similar Substances" Masters Thesis. March 1996. Second Reader
10. Bass, W. Andrew. "Projective Geometry of Angiographic Images for Interactive, Image-Guided Surgery." Master's Thesis., June, 1996. First Reader
11. Stefansic, James. "Analysis of Spatial Accuracy in Magnetic Resonance and Computed Tomography Angiography." Master's Thesis. Jan 1997. Second Reader.
12. Shima, Daniel. "Integration of Stereotactic Ultrasonic Data into An Interactive, Image-Guided Neurosurgical System". Master's Thesis July 1997. First Reader
13. Yammen, Suchart. "Segmentation of Tumors in MR Serial Scans Using a Non-Rigid Registration Method". Master's Thesis, August 1998. Second Reader.
14. Hartmann, Steve. "Automatic Segmentation of Medical Images using Optical Flow Based Atlas Deformation". Master's Thesis, March 1999 Second Reader.
15. Muratore, Diane. " " Master's Thesis First Reader.
16. Cash, David. "Multiple Simultaneous Angle Maximum Intensity Projection of Vascular Images", Master's Thesis, March 2000, First Reader.
17. McDonough, Edward, "Effects of Bandwidth of Teleassessment of Stroke" July 2001, First Reader
18. Ngyuen, James, July 2001, Second reader
19. Mackanos, Mark " Spatial Distortion Field Correction for Endoscopy. An Application to Image-Guided Surgery." August 2001, First Reader

Galloway, Robert L., Jr., Ph.D. (Continued)

20. Gebhart, Steven. "Dynamic 3-D Optical Tracking of the Vanderbilt FEL" November 2001. First Reader
21. Sinha, Tuhin. "" Second Reader
22. Warmath, John "Tracked Transrectal Ultrasound for Detection of Colo-rectal Masses " March 2003, Second Reader
- 23.

Underway (First Reader for All)

Harris, Steve "Image-Guided Gene Therapy Delivery"

Stzipanovitz, Dora "Magnetically tracked localization for ophthalmologic surgery"

Clemens, Logan "Integration and Analysis of Real-time intraoperative imaging"

Medicine:

1. Fanburg, Jonathan. "In-Vitro and In-Vivo Measurement of T_1 and T_2 in Brain Tissues." October, 1988. Second Reader.
2. Failing, Ann. "In-Vivo Comparison of Monoclonal and Polyclonal AVF Sarcoma Cells in Glioma Models". April, 1989. Advisor.
3. Ammon, Sally. "The Physiological Basis of Neoplasm Imaging - A Trans Modality Study." April 1991. Advisor.
4. Utz, Andrea. "Computer-Aided Mammogram Analysis." April 1993, Advisor.
5. Peach, Sharon. "Three-Dimensional Reconstructions of Tomographic Images", Aug. 1993. Advisor.
6. Newsome, Reese. "Microendoscopy and Ultrasound in Stereotactic Neurosurgery". April 1994. Advisor.
7. Ko, Michael. "Image-Guided Liver Surgery". April 1997. Advisor.
8. Herline, Alan MD – "Development of a system for image-guided liver surgery" 1999-2000 Mentor.
9. Poulouse, Ben MD – "Three dimensional imaging of the biliary tree" 2002 Mentor
10. Bao, Phillip MD – "Tracked laparoscopic ultrasound" 2003-2005 Mentor

Undergraduate Research Projects.

1. Wu, Cheyenne. "Magnetic Resonance Imaging: Digital Subtraction Angiography". May, 1987. Preceptor.
2. Evans, Richard. "Development and Testing a Computer ECG Analyzer". May, 1988. Preceptor.
3. Lovatt, Bill. "A Multi-channel Telemetry Device". May, 1988. Preceptor.
4. Paulus, Leslie. "Canine Glioma Architecture as Revealed by Medical Imaging". December, 1988. Preceptor.
5. Clingman, Kristin. "A Time-Dependent Gain Device for Medical Ultrasound". December, 1988. Preceptor.
6. Balogh, Allison. "Determination of Positional Feedback Accuracy of a Robotic Pointer System in Stereotactic Neurosurgery". December, 1988. Second Reader.
7. Nixon, Alexander. "A Study of Closed Skull Brain Motion". April 1991. Preceptor.
8. Fitzpatrick, Noah. "CSF Tidal Flow Measurement Using MRI". April 1991. Preceptor.
9. Golden, Carrie and Linn, David "A Visible Light Telemetry System". April 1991. Preceptor.
10. Gowda, Ashok "A Beat-to-Beat Cardiac Tachometer". April 1991. Preceptor.

Galloway, Robert L., Jr., Ph.D. (Continued)

11. Horrar, James " A Variable Rate Demand Pacemaker ". April 1991. Preceptor.
12. Meier, Michael "Design of an Internal Suspension System for Articulated Arms". April 1991. Preceptor.
13. Piper, James " An Electro-Oculogram Amplifier" April 1991. Preceptor.
14. Bass, Wayne Andrew "Integration of Intraoperative Ultrasound and Endoscopic Images into an IIG system." Aug. 1992. Preceptor
15. Bass, Wayne Andrew "A Device for Mapping Motor-Evoked Responses in Tomographic Image Space". Dec 1992, Preceptor.
16. Noonan, Holly "An Interactive, Image-Guided Device for Use with a Free Electron Laser". Dec 1992, Preceptor.
17. Grusin, Kelley "A Long-range Infrared Telemetry Device for Medical Signals". Dec. 1993, Preceptor.
18. Ohazama, Chikai "Voice Control for An Interactive, Image-Guided Surgical System". Dec 1993, Preceptor.
19. Agerwal, Ankur "Differences in Visualized Brain Tumor Volumes, CT, MR-T1, MR-T2 and MR-PD.", December 1994, Preceptor
20. Keefer, Eric "Implementation of the Unit Quaterion Technique for Multi-dimensional registration". August 1995. Preceptor.
21. Freeman, Mark. "Image-Space, Physical Space Registration of Vertebral Structures based on Intrinsic Fiducials". December 1995. Preceptor.
22. Puyanita, Mark. "Freedom of Motion Quantifier" April 1997, Preceptor
23. Neir, Cassandra. "A System for Improved Accuracy Calibration in an Articulated Arm". July 1997, Preceptor.
24. McCord, Ryan. "A flexible printed circuit design for the creation of tracked surgical instruments." Dec 1997.
25. Guitierrez, Luis. "A three-dimensionally tracked Phased Array Ultrasound Device" May 1998
26. Futral, Valerie. "A Linear B-Mode Tracked Ultrasound Device" December 1999.
27. McCreery, Tammy. "Rigid Body Computer Aided Design Software and Cryogenic Probe Design" April 2000.
28. Nystrom Joy. "Comparison of Perceived Vascular Size between CT and Ultrasound" Dec 2000
29. Wempe, Greg. "A Three-Dimensionally Tracked Cortical Stimulator" April 2001
30. Grow, Meg " A LADS device for Otolaryngology" April 2002
31. Tebbebi, Pamela "A Deformable Anatomic Naming Atlas" April 2002
32. Pickett, Patrick "Detection System for Retained Lap Sponges" April 2002
33. Harris, Steve "Image-Guided Gene Therapy" April 2002
34. Brogan David "Magnetic Localization and Tracking", September 2002
35. Honeycutt, Claire "Analysis of Liver Motion", September 2002
36. Brogan, David "Integration of Magnetic Tracking into an Image-Guided Surgery System", April 2003

Galloway, Robert L., Jr., Ph.D. (Continued)

COMMUNITY SERVICE

Invited Participant: The Raft Debate. Fall 1987, Fall 1993.

Faculty Advisor: Phi Kappa Sigma fraternity. Fall 1987 until Fall 1993.

Invited Speaker: " On the Outside Looking In: Advances in Medical Imaging." Parents Weekend. 1988, 1991.

Invited Speaker: "What's that engineer doing in the operating room?" Vanderbilt PAVE program. July 1991, July 1992, July 1993, July 1994, July 1995, July 1996, July 1997.

Invited Speaker: "Anatomic and Functional Guidance of Brain Surgery", Neuroscience Seminar Jan 13, 2000, Vanderbilt University

Invited Speaker: "Technology-Guided Therapy", Marquette University, Jan 21, 2000

Invited Speaker: "Technology-Guided Therapy", NSBE Regional Meeting , Jan 28, 2000