

BIOGRAPHICAL SKETCH

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NAME Gilland, David Robert		POSITION TITLE Associate Professor of Biomedical Engineering and Nuclear and Radiological Engineering	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Michigan State University	B.S.	1981	Zoology
University of North Carolina	M.S.	1986	Biomedical Engineering
University of North Carolina	Ph.D.	1989	Biomedical Engineering

A. Professional Positions

- 1989-1992 Research Associate, Department of Radiology, Duke University Medical Center, Durham, North Carolina
- 1993-1999 Assistant Research Professor, Department of Radiology, Duke University Medical Center, Durham, North Carolina
- 1999-1999 Associate Research Professor, Department of Radiology, Duke University Medical Center, Durham, North Carolina
- 2000-present Associate Professor, Department of Nuclear and Radiological Engineering, University of Florida, Gainesville, FL 32611

B. Selected peer-reviewed publications (in chronological order)

- Gilland DR, Tsui BMW, Perry JR, McCartney WH, Berg J. Determination of the optimum filter function for SPECT imaging. *J Nucl Med*, 29:643-650, 1988.
- Gilland DR, Tsui BMW, Hu HB, Perry JR. Computer simulated cardiac SPECT data for use in evaluating reconstruction algorithms. In: Todd-Pokropek AE, Viergever MA, eds. *Medical Images: Formation, Handling, and Evaluation*. NATO ASI Series F, Springer-Verlag, Heidelberg, 525-538, 1991.
- Gilland DR, Jaszczak RJ, Greer KL, Coleman RE. Quantitative SPECT reconstruction of iodine-123 data. *J Nucl Med*, 32:527-533, 1991.
- Gilland DR, Jaszczak RJ, Turkington TG, Greer KL, Coleman RE. Quantitative SPECT imaging with indium-111. *IEEE Trans Nucl Sci*, 38:761-767, 1991.
- Gilland DR, Tsui BMW, Metz CE, Jaszczak RJ, Perry JR. Evaluation of maximum likelihood-EM reconstruction for SPECT by ROC analysis. *J Nucl Med*, 33:451-457, 1992.
- Gilland DR, Jaszczak RJ, Bowsher JE, Turkington TG, Liang Z, Greer KL, Coleman RE. Quantitative SPECT brain imaging: effects of attenuation and detector response. *IEEE Trans Nucl Sci*, 40:294-299, 1993.
- Jaszczak RJ, Gilland DR, Jang S, Greer KL, Coleman RE. Fast transmission CT for determining attenuation maps using a collimated, shuttered line source and fan beam collimation. *J Nucl Med*, 34:1577-1586, 1993.
- Gilland DR, Jaszczak RJ, Wang H, Turkington TG, Greer KL, Coleman RE. A 3D model of non-uniform attenuation and detector response for efficient iterative reconstruction in SPECT. *Phys Med Biol*, 39:547-561, 1994.
- Gilland DR, Jaszczak RJ, Turkington TG, Greer KL, Coleman RE. Volume and activity quantitation with iodine-123 SPECT. *J Nucl Med*, 35:1707-1713, 1994.
- Gilland DR, Jaszczak RJ, Bowsher JE, Greer KL, Coleman RE. Measured accuracy and precision in quantitative SPECT imaging with iodine-123. *IEEE Trans Nucl Sci*, 42:1120-1125, 1995.

11. Gilland DR, Johnson EL, Turkington TG, Coleman RE, Jaszczak RJ. Evaluation of a pinhole collimator for I-131 SPECT head imaging. *IEEE Trans Nucl Sci*, 43:2230-2238, 1996.
12. Gilland DR, Jaszczak RJ, Riauka TA, Coleman RE. Approximate three-dimensional iterative reconstruction for SPECT. *Med Phys*, 24:1421-1429, 1997.
13. Gilland DR, Wang H, Coleman RE, Jaszczak RJ. Long focal length, asymmetric fan beam collimation for transmission acquisition with a triple camera SPECT system. *IEEE Trans Nucl Sci*, 44:1191-1196, 1997.
14. Higdon DM, Bowsher JE, Johnson VE, Turkington TG, Gilland DR, Jaszczak RJ. Fully Bayesian estimation of Gibbs hyperparameters for emission computed tomography data. *IEEE Trans Med Imag*, 16:516-526, 1997.
15. Gilland DR, Jaszczak RJ, Greer KL, Coleman RE. Transmission imaging for nonuniform attenuation correction using three-headed SPECT camera. *J Nucl Med*, 39:1105-1110, 1998.
16. Scarfone C, Jaszczak RJ, Munley MT, Gilland DR, Greer KL, Coleman RE, Marks LB. Quantitative pulmonary SPECT for radiotherapy applications. *Med Phys*, 26:1579-1588, 1999.
17. Munley MT, Marks LB, Scarfone C, Sibley GS, Patz EF, Turkington TG, Jaszczak RJ, Gilland DR, Anscher M, Coleman RE. Multimodality nuclear medicine imaging in three-dimensional radiation treatment planning for lung cancer: challenges and prospects. *Lung Cancer*, 23:105-114, 1999.
18. Gilland DR, Jaszczak RJ, Turkington TG, Coleman RE. Comparison of transmission acquisition approaches for SPECT non-uniform attenuation compensation. *IEEE Trans Nucl Sci*, 45:1244-1249, 1998.
19. Scarfone C, Jaszczak RJ, Gilland DR, Munley MT, Marks LB, Coleman RE. Bayesian SPECT lung imaging for visualization and quantification of pulmonary perfusion. *IEEE Trans Nucl Sci*, 45:3045-3052, 1998.
20. Jang S, Jaszczak RJ, Tsui BMW, Metz CE, Gilland DR, Turkington TG, Coleman RE. ROC evaluation of SPECT myocardial lesion detectability with and without non-uniform attenuation compensation using an anthropomorphic female phantom. *IEEE Trans Nucl Sci*, 45:2080-2088, 1998.
21. Peter J, Gilland DR, Jaszczak RJ, Coleman RE. Four-dimensional superquadric-based cardiac phantom for Monte Carlo simulation of radiological imaging systems. *IEEE Trans Nucl Sci*, 46:2211-2217, 1999.
22. Tornai MP, Jaszczak RJ, Gilland DR, Coleman RE, Ooie Y, Taguchi M, Enos G. Investigation of large field-of-view transmission imaging for SPECT attenuation compensation with Gd-153, Tc-99m, and Ce-139 sources. *IEEE Trans Nucl Sci*, 47:1182-1191, 2000.
23. Laymon CM, Turkington TG, Gilland DR, Coleman RE. Transmission scanning system for a gamma camera coincidence scanner. *J Nucl Med*, 41:692-699, 2000.
24. Laading JL, McCulloch C, Johnson VE, Gilland DR, Jaszczak RJ. A Hierarchical feature-based deformation model applied to 4D cardiac SPECT data. *Information Processing in Medical Imaging: Lecture Notes in Computer Science*, 1613: 266-279, 1999.
25. Gilland DR, Jaszczak RJ, Coleman RE. Transmission CT reconstruction for offset fanbeam collimation. *IEEE Trans Nucl Sci*, 47: 1602-1606, 2000.
26. La Riviere P, Pan X, Gilland DR, Kao C-M, Chang W, Jaszczak RJ. Transmission image reconstruction and redundant information in SPECT with asymmetric fanbeam collimation. *IEEE Trans Nucl Sci*, 48: 1357-1363, 2001.
27. Chen M, Jaszczak RJ, Gilland DR, Bowsher JE. An evaluation of cardiac uniformity, contrast and SNR with dual-head 180 deg. and triple-head 360 deg. SPECT scans. *IEEE Trans Nucl Sci*, 48:1428-34, Aug 2001.
28. Bowsher JE, Tornai MP, Peter J, González Trotter DE, Krol A, Gilland DR, Jaszczak RJ. Modeling the axial extension of a transmission line source within iterative reconstruction via multiple transmission sources. *IEEE Trans Med Imag*, 21:200-215, 2002.
29. Chen M, Peter J, Jaszczak RJ, Gilland DR, Bowsher JE, Tornai MP, Metzler SD. Observer studies of cardiac lesion detectability with triple-head 360 degree vs. dual-head 180 degree SPECT acquisition using simulated projection data. *IEEE Trans Nucl Sci*, 49:655-660, 2002.
30. Gilland DR, Mair BA, Bowsher JE, Jaszczak RJ. Simultaneous reconstruction and motion estimation for gated cardiac ECT. *IEEE Trans Nucl Sci*, 48:2344-2349, 2002.
31. Mair BA, Gilland DR, Cao Z. Simultaneous motion estimation and image reconstruction from gated data. Accepted to IEEE International Symposium on Biomedical Imaging, July 7-10, 2002, Washington D.C, pp. 661-664.
32. Cao Z, Gilland DR, Mair BA, Jaszczak RJ. 3D motion estimation with image reconstruction for gated cardiac ECT. *IEEE Trans Nucl Sci*, 50: 384-388, 2003.
33. Cao Z, Gilland DR, Mair BA, Tsui BMW. An observer model evaluation of simultaneous reconstruction and motion estimation for emission tomography. 2004 IEEE International Symposium on Biomedical Imaging.

pp. 940-943, IEEE Operations Center, P.O. Box 1331, Piscataway, NJ.

34. Tipnis U, Gilland DR, Smith MF, Drane WE, Majewski S. Design of a compact, mobile PET detector for bedside cardiac imaging. In: 2003 IEEE Nuclear Science Symposium Conference Record, IEEE Operations Center, P.O. Box 1331, Piscataway, NJ.
35. Tipnis U, Smith MF, Turkington TG, Wilson J, Majewski S, Gilland DR. A simulation study of a bedside cardiac PET imager. Accepted to: 2004 IEEE Nuclear Science Symposium Conference Record, IEEE Operations Center, P.O. Box 1331, Piscataway, NJ.

C. Research Support

Ongoing Research Support

1 R01 HL 073336-01 (Gilland) 07/01/2004-06/30/07

NIH/NHLBI

Gated Cardiac ECT reconstruction with motion analysis

The major goal of this project is to develop four-dimensional reconstruction methods that simultaneously estimate cardiac wall in emission computed tomography.

W81XWH-04-0594 (Gilland) 05/13/04-05/12/06

United States Army

Preclinical and clinical evaluation of high resolution, mobile gamma camera and positron imaging devices.

The major goal of this project is to develop a high resolution, mobile gamma camera for PET and SPECT imaging for bedside applications.

Completed Research Support

Gilland (PI) 9/01/98-9/30/03

The Whitaker Foundation

Hybrid data for evaluation of cardiac SPECT methods

This study evaluates methods of simulating SPECT cardiac data including estimating and modeling myocardial wall motion. This project has been instrumental as preliminary investigation for the current proposal.

Role: PI

R29 HL52162-05 Gilland (PI) 6/01/95 – 5/31/02

NIH/NHLBI

An ROC evaluation of Tc-99m cardiac SPECT methods

The goal of this study was to develop new SPECT imaging methods, including attenuation correction using acquired transmission data, and evaluate the methods using ROC analysis.

Role: PI

Jaszczak (PI) 04/01/97-12/24/00

Hitachi Medical Corporation (Tokyo, Japan) /Duke University Medical Center SPECT Research Agreement.

The major goals of this research agreement were to implement offset fan beam reconstruction algorithms along with associated hardware, including line sources and collimators, for evaluation and testing of transmission computed tomography in cardiac SPECT and also PET modes.

Role: Co-Investigator