
BIOGRAPHICAL SKETCH

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NAME David R. Gilland	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) GILLAND			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Michigan State University, E. Lansing, MI	B.S.	1981	Zoology
University of North Carolina, Chapel Hill, NC	M.S.	1986	Biomedical Engineering
University of North Carolina, Chapel Hill, NC	Ph.D.	1989	Biomedical Engineering

A. Personal Statement

I have been involved in research in nuclear medicine for over 20 years and have over 85 peer-reviewed publications as primary author or co-author. My past experience includes the role of Principal Investigator on four major grants from the National Institutes of Health, Department of Defense, and the Whitaker Foundation totaling over \$3,000,000 in total costs. I have just completed as P.I. a research project from the Department of Defense, which involves the pre-clinical and clinical evaluation of a novel, mobile cardiac SPECT imager. This device is focused on the diagnosis of coronary artery disease, which is highly relevant to the theme of this T32 proposal "Multidisciplinary Training program in Hypertension". I am happy to continue serving as a possible future mentor and on the recruitment and review committee for this T32.

B. Positions and Honors

Positions and Employment

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- Associate Professor, Department of Biomedical Engineering, University of Florida, Gainesville, Florida

C. Selected Peer-reviewed Publications (Selected from 85 peer-reviewed publications)

Most relevant to the current application

- 1 Parker, J.G. & Gilland, D.R. (2008). Wall motion estimation for gated cardiac emission tomography: physical phantom evaluation. *IEEE Transactions on Nuclear Science*, 55, 531-536.
- 2 Gilland, D.R., Mair, B.A. & Parker, J.G. (2008). Motion estimation for cardiac emission tomography by optical flow methods, *Physics in Medicine and Biology*, 53, 2991-3006. PMID: PMC2424264
- 3 Parker, J.G., Mair, B.A. & Gilland, D.R. (2009). Respiratory motion correction in gated cardiac SPECT using quaternion-based, rigid body registration. *Medical Physics*, 36, 4742-4754. PMID: PMC2152995
- 4 Studenski, M.T., Gilland, D.R., Parker, J.G., Majewski, S., Hammond, W., Weisenberger, A. & Popov, V. (2009). Performance evaluation of a bedside cardiac SPECT system, *IEEE Transactions on Nuclear Science*, 56, 625-632.

- 5 Studenski, M.T., Gilland, D.R. & Cebula, A. (2010). Acquisition and processing methods for a bedside cardiac SPECT imaging system. IEEE Transactions on Nuclear Science, 57, 206-213.

Additional recent publications of importance to the field (in chronological order)

1. Gilland, D.R., Jaszczak, R.J., Bowsher, J.E., Greer, K.L. & Coleman, R.E. (1995). Measured accuracy and precision in quantitative SPECT imaging with iodine-123. IEEE Transactions on Nuclear Science, 42, 1120-1125.
2. Gilland, D.R., Johnson, E.L., Turkington, T.G., Coleman, R.E. & Jaszczak, R.J. (1996). Evaluation of a pinhole collimator for I-131 SPECT head imaging. IEEE Transactions on Nuclear Science, 43, 2230-2238.
3. Gilland, D.R., Jaszczak, R.J., Riauka, T.A. & Coleman, R.E. (1997). Approximate three-dimensional iterative reconstruction for SPECT. Med Phys, 24, 1421-1429.
4. Gilland, D.R., Wang, H., Coleman, R.E. & Jaszczak, R.J. (1997). Long focal length, asymmetric fan beam collimation for transmission acquisition with a triple camera SPECT system. IEEE Transactions on Nuclear Science, 44, 1191-1196.
5. Gilland, D.R., Jaszczak, R.J., Greer, K.L. & Coleman, R.E. (1998). Transmission imaging for nonuniform attenuation correction using three-headed SPECT camera. J Nucl Med, 39, 1105-1110.
6. Gilland, D.R., Jaszczak, R.J., Turkington, T.G. & Coleman, R.E. (1998). Comparison of transmission acquisition approaches for SPECT non-uniform attenuation compensation. IEEE Transactions on Nuclear Science, 45, 1244-1249.
7. Gilland, D.R., Jaszczak, R.J. & Coleman, R.E. (2000). Transmission CT reconstruction for offset fanbeam collimation. IEEE Transactions on Nuclear Science, 47, 1602-1606.
8. Gilland, D.R., Mair, B.A., Bowsher, J.E. & Jaszczak, R.J. (2002). Simultaneous reconstruction and motion estimation for gated cardiac ECT. IEEE Transactions on Nuclear Science, 48, 2344-2349.
9. Cao, Z., Gilland, D.R., Mair, B.A. & Jaszczak, R.J. (2003). 3D motion estimation with image reconstruction for gated cardiac ECT. IEEE Transactions on Nuclear Science, 50, 384-388.
10. Mair, B.A., Gilland, D.R. & Sun, J. (2006). Estimation of images and non-rigid deformations in gated emission CT. IEEE Trans Med Imag, 25, 1130-1144.

D. Research Support

Completed Research Support

03091891

Gilland (PI)

05/01/04-10/20/08

Pre-clinical and clinical evaluation of high resolution mobile gamma camera and positron imaging devices
Agency: Department of Defense

The goal of this project is to design, build and evaluate (pre-clinically and clinically) a mobile, hybrid SPECT/PET camera. The camera is designed to be moved within a hospital to image patients who cannot be transported to conventional imaging facilities, for example, patients in an intensive care unit. The primary application is cardiac imaging.

Role: PI

R01 HL073336

Gilland (PI)

07/01/04-06/30/08

Gated cardiac ECT reconstruction with motion analysis

The goal of this project was to develop reconstruction methods for gated ECT that incorporate the estimated cardiac motion to achieve improved signal-to-noise ratio in the reconstructed image.

Role: PI