

Curriculum Vitae
Gregory J. Klein

PERSONAL INFORMATION

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EDUCATION

University of Nebraska, Lincoln, NE	B.S.	1985	Electrical Engineering
University of Maryland, College Park, MD	M.S.	1989	Electrical Engineering
University of California, Berkeley, CA	Ph.D.	1999	Vision Science

PROFESSIONAL EXPERIENCE

1983 to 1984	Cooperative Student Engineer, Kellogg Company, Omaha, NE
1985 to 1985	Engineering Intern, McDonnell Douglas Corporation, St. Louis, MO
1986 to 1990	Engineer, Systems Analysis Group, The Johns Hopkins University Applied Physics Laboratory, Laurel, MD
1990 to 1990	Contractor, Baseline Engineering, San Jose CA
1994 to 1994	Graduate Student Instructor, University of California, Berkeley
1990 to present	Computer Scientist, Lawrence Berkeley Laboratory, University of California, Berkeley

AWARDS AND HONORS

1981 - 1985	Regents Scholarship, University of Nebraska, Lincoln
1984	Superior Senior Scholarship Award, University of Nebraska, Lincoln
1985	B.S. with honors, University of Nebraska, Lincoln
1990	Elected to associate membership, Sigma Xi Honorary Research Society

PUBLICATIONS

Refereed Articles

1. R. W. Flower and G. J. Klein. Pulsatile flow in the choroidal circulation: A preliminary investigation. *Eye*, 4((Pt 2)):310–318, 1990.
2. G. J. Klein, R. H. Baumgartner, and R. W. Flower. An image processing approach to characterizing choroidal blood flow. *Investigative Ophthalmology and Visual Science*, 31(4):25–31, 1990.
3. R. H. Huesman, G. J. Klein, and T. K. Fleming. A hybrid UNIX controller for real-time data acquisition. *IEEE Trans Nucl Sci*, 43(3):2150–2153, 1996.

4. G. J. Klein, B. W. Reutter, and R. H. Huesman. Non-rigid summing of gated PET via optical flow. *IEEE Trans Nucl Sci*, 44(4):1509–1512, 1997.
5. B. W. Reutter, G. J. Klein, and R. H. Huesman. Automated 3-D segmentation of respiratory-gated PET transmission images. *IEEE Trans Nucl Sci*, 44(6):2473–2476, 1997.
6. G. J. Klein, X. Teng, W. J. Jagust, J. L. Eberling, A. Acharya, B. W. Reutter, and R. H. Huesman. A methodology for specifying PET volumes-of-interest using multi-modality techniques. *IEEE Trans Med Imag*, 16(4):405–415, 1997.
7. R. H. Huesman, G. J. Klein, B. W. Reutter, P. G. Coxson, E. H. Botvinick, and T. F. Budinger. Strategies for extraction of quantitative data from volumetric dynamic cardiac PET data. *Cardiology*, 88:54–61, 1997.
8. G. J. Klein, B. W. Reutter, M. H. Ho, J. H. Reed, and R. H. Huesman. Real-time system for respiratory-cardiac gating in positron tomography. *IEEE Trans Nucl Sci*, 45(4):2139–2143, 1997.
9. J. O’Neill, J. L. Eberling, N. Schuff, W. J. Jagust, B. Reed, G. Soto, F. Ezekiel, G. J. Klein, and M. W. Weiner. Method to correlate 1H MRSI and 18FDG-PET. *Magn Reson Med*, 43:244–250, 2000.
10. R. H. Huesman, G. J. Klein, W. W. Moses, J. Qi, B. W. Reutter and P R Virador. List mode maximum likelihood reconstruction applied to positron emission mammography with irregular sampling. *IEEE Trans Med Imag*, 2000. In press.
11. G. J. Klein and R. H. Huesman. Elastic material model mismatch effects in deformable motion estimation. *IEEE Trans Nucl Sci*, 2000. In press.

Refereed Conference Proceedings

1. G. J. Klein and R. H. Huesman. A 3D optical flow approach to addition of deformable PET volumes. In *Proc. IEEE Nonrigid and Articulated Motion Workshop, June 15-16, Puerto Rico*, pages 136–143. IEEE Computer Society, 1997.
2. G. J. Klein. Forward deformation of PET volumes using material constraints. In B. Vemuri, editor, *Proc. Workshop on Biomedical Image Analysis, June 26-27, Santa Barbara, CA*, pages 64–71. IEEE Computer Society, 1998.
3. G. J. Klein. Forward deformation of PET volumes using non-uniform elastic material constraints. In A. Kuba and J. Attila, editors, *Information Processing in Medical Imaging, 16th Annual Conference*, volume 1613, pages 358–363. Springer, 1999.
4. G. J. Klein. Four-dimensional processing of deformable cardiac PET data. In *Proc. Workshop on Mathematical Methods in Biomedical Image Analysis, June 11-12, Hilton Head Island, SC*, pages 127-134. IEEE Computer Society, 2000.

Conference Proceedings

1. S. D. Jones and G. J. Klein. Simulation of a reservation-based multiple access control protocol for a satellite communications network. In *Proc. Summer Computer Simulation Conference, Seattle, Washington, July 25 - 28*, pages 183–188, 1988.
2. R. W. Flower, G. J. Klein, and R. H. Baumgartner. Detection of anomalous choroidal blood flow. In *Proc. Int’l Meeting of the Retinal Pigment Epithelium, S. Margherita Ligure, Italy*, 1988.

3. G. J. Klein, R. W. Flower, and R. H. Baumgartner. Extraction of blood flow parameters from choroidal angiography. In *Proc. 33rd Int'l Symposium on Optical and Optoelectronic Applied Science and Engineering, New Methods in Microscopy and Low Light Imaging*, volume SPIE 1161, pages 399–408, 1989.
4. R. W. Flower, G. J. Klein, and R. H. Baumgartner. Consideration of equipment used for recording and analyzing ICG choroidal angiograms. In *Proc. 2nd Int'l Symposium on the Choroid*, pages 78–80, 1989.
5. R. H. B. G. J. Klein, R. W. Flower, and A. Fryczkowski. Choroidal vascular dynamics in diabetic rhesus monkeys. In *Proc. 2nd Int'l Symposium on the Choroid*, pages 81–89, 1989.
6. G. J. Klein, R. W. Flower, and R. H. Baumgartner. Extraction of dynamic information from choroidal angiography. In *Proc. 2nd Int'l Symposium on the Choroid*, pages 90–95, 1989.
7. G. J. Klein. Estimation of MSK signal noise using a hopfield neural network. In *Proc. Int'l Joint Conference on Neural Networks*, volume 2, pages 385–388, 1990.
8. G. J. Klein, X. Teng, B. W. Reutter, R. H. Huesman, W. J. Jagust, and T. F. Budinger. A 3D navigational environment for specifying positron emission tomography volumes-of-interest. In *Proc. 1995 Nuclear Science Symposium and Medical Imaging Conference, San Francisco, CA*, pages 1452–1455, 1995.
9. G. J. Klein, B. W. Reutter, R. H. Huesman, P. G. Coxson, and T. F. Budinger. Volume-of-interest specification on arbitrarily resliced volume datasets. In E. Hoffman, editor, *Medical Imaging 1995: Physiology and Function from Multidimensional Images*, volume Proc. SPIE 2433, pages 214–223, 1995.
10. P. G. Coxson, R. H. Huesman, S. Lim, G. J. Klein, B. W. Reutter, and T. F. Budinger. Comparison of models for data from a positron emission tomograph. In E. Hoffman, editor, *Medical Imaging 1995: Physiology and Function from Multidimensional Images*, volume Proc. SPIE 2433, pages 224–234, 1995.
11. R. H. Huesman, G. J. Klein, and T. K. Fleming. A hybrid real-time UNIX controller for the Donner 600-Crystal Positron Tomograph. In *Conference Record of the 1994 IEEE Nuclear Science Symposium and Medical Imaging Conference, Norfolk, VA, October 30 - November 5*, pages 1648–1651, 1994.
12. G. J. Klein, B. W. Reutter, and R. H. Huesman. Non-rigid summing of gated PET via optical flow. In A. Del Guerra, editor, *1996 IEEE Nuclear Science Symposium Conference Record, Anaheim, CA November 2-9*, pages 1339–1342, 1996.
13. B. W. Reutter, G. J. Klein, K. M. Brennan, and R. H. Huesman. Acquisition and automated 3-D segmentation of respiratory/cardiac-gated PET transmission images. In A. Del Guerra, editor, *1996 IEEE Nuclear Science Symposium Conference Record, Anaheim, CA November 2-9*, pages 1357–1361, 1996.
14. G. J. Klein, B. W. Reutter, M. H. Ho, J. H. Reed, and R. H. Huesman. Real-time system for respiratory-cardiac gating in positron tomography. In *1997 IEEE Nuclear Science Symposium Conference Record, Albuquerque, NM*, pages 1284–1287, 1997.
15. G. J. Klein, B. W. Reutter, T. F. Budinger, and R. H. Huesman. Cardiac gating of transmission data is unnecessary for attenuation compensation of double-gated emission scans. In *1998 IEEE Nuclear Science Symposium Conference Record, Toronto, Canada*, pages 2019–2022, 1998.
16. G. J. Klein, X. Teng, P. T. Schoenemann, and T. F. Budinger. A sensitivity analysis of brain morphometry based on MRI-derived surface models. In E. A. Hoffman, editor, *Medical Imaging 1998: Physiology and Function from Multidimensional Images*, volume Proc. SPIE 3337, pages 294–303, 1998.
17. R. H. Huesman, G. J. Klein, and W. W. Moses. List mode maximum likelihood reconstruction applied to positron emission mamography. In *Proc. 1999 Int'l Meeting on Fully Three-Dimensional Image*

Reconstruction in Radiology and Nuclear Medicine, June 23-26, Egmond aan Zee, The Netherlands, pages 275–278, 1999.

18. G. J. Klein and R. H. Huesman. Elastic material model mismatch effects in deformable motion estimation. In *1999 IEEE Nuclear Science Symposium Conference Record, Seattle, WA, 1999*. In Press.

Abstracts

1. A. Fryczkowski, R. Chambers, E. Craig, G. Klein, R. Baumgartner, O. Jonasson, J. Walker, and P. Weber. The choroidal and retinal vascular changes in diabetic monkeys. *Assn'n for Research in Vision and Ophthal (ARVO)*, 1989.
2. G. J. Klein, R. W. Flower, and R. H. Baumgartner. Extraction of dynamic information from choroidal angiography. In *2nd Int'l Symposium on Ocular Circulation and Neovascularization, Baltimore, MD, page 77, 1989.*
3. A. Fryczkowski, R. W. Flower, and G. J. Klein. Follow-up of the diabetic microangiography in monkeys. *Assn'n for Research in Vision and Ophthal (ARVO)*, 31(4):625–25, 1990.
4. T. Budinger, L. Araujo, N. Ranger, P. Coxson, G. Klein, R. Huesman, and R. Alavi. Dynamic SPECT feasibility studies. *J Nucl Med*, 32(5 suppl):955, 1991.
5. R. H. Huesman, G. J. Klein, and T. F. Budinger. Statistical correlations in a PET time-activity curve due to attenuation correction. *J Nucl Med*, 35(5 suppl):183P, 1994.
6. T. F. Budinger, G. J. Klein, J. H. Reed, K. M. Brennan, and R. H. Huesman. Compensation for respiratory motion in cardiac PET — a feasibility study. *J Nucl Med*, 37(5 suppl):130P, 1996.
7. B. W. Reutter, S. Lim, R. H. Huesman, P. G. Coxson, G. J. Klein, and T. F. Budinger. Cardiac creep during rest/stress myocardial perfusion studies — patient motion and lung air redistribution. *J Nucl Med*, 37(5 suppl):131P, 1996.
8. R. H. Huesman, G. J. Klein, and B. W. Reutter. Respiratory compensation in cardiac PET using doubly-gated acquisitions. *J Nucl Med*, 38(5 suppl):114P, 1997.
9. B. W. Reutter, G. J. Klein, and R. H. Huesman. Respiratory-compensated cardiac PET attenuation correction via automated 4-D segmentation. *J Nucl Med*, 38(5 suppl):203P, 1997.
10. R. H. Huesman, G. J. Klein, B. W. Reutter, and X. Teng. Multi-slice PET quantitation using 3D volumes-of-interest. *NeuroImage*, 5(4):B29, 1997.
11. L. T. Kwan, J. L. Eberling, B. R. Reed, G. J. Klein, N. Schuff, M. W. Weiner, and W. J. Jagust. Reductions in pre-frontal cerebral glucose metabolism in patients with dementia and subcortical strokes. *1997 Society for Neuroscience Meeting*, 23:834, 1997.
12. R. H. Huesman, G. J. Klein, B. W. Reutter, J. H. Reed, S. Grootenk, and T. F. Budinger. List mode data acquisition for retrospective respiratory-cardiac gated pet. *J Nucl Med*, 39(5 suppl):93P, 1998.
13. T. E. Nordahl, H. F. VanBrocklin, J. P. O'Neil, N. Kusubov, G. J. Klein, and T. F. Budinger. Evaluation of [F- 18]fluoro-m-tyrosine (FMT) patient studies: Dosimetry and statistical considerations. *J Nucl Med*, 39(5 suppl):190P, 1998.
14. G. J. Klein, B. W. Reutter, and R. H. Huesman. Data-driven respiratory gating in list mode cardiac PET. *J Nucl Med*, 40(5 suppl):112P, 1999.

15. J. O. O'Neill, N. Schuff, G. Soto, F. Ezekiel, J. L. Eberling, G. J. Klein, W. J. Jagust, and M. W. Weiner. Method to correlate NAA and CMRglu from coregistered 1-H MRSI and 18-FDG-PET data. *Book of Abstracts, Int'l Soc. Mag. Reson. Med. 7th Annual Meeting*, 1999.
16. R. H. Huesman, G. J. Klein, B. W. Reutter, E. H. Botvinick, and T. F. Budinger, "Evaluation of Respiratory Compensation Efforts in Cardiac PET," *J Nucl Med*, 41(5 suppl): 21P, 2000.

Book Chapters

1. G. J. Klein, R. W. Flower, and R. H. Baumgartner. *Image Analysis of Infrared Choroidal Angiography*, chapter 32, pages 1299–1315. Springer-Verlag, New York, 1990.
2. R. H. Huesman, G. J. Klein, B. W. Reutter, and X. Teng. Multi-slice PET quantitation using 3D volumes-of-interest. In R. E. Carson, M. E. Daube-Witherspoon, and P. Herscovitch, editors, *Quantitative Functional Brain Imaging with Positron Emission Tomography*, chapter 8, pages 51–58. Academic Press, 1998.

Unpublished Reports

1. R. H. Huesman, B. L. Knittel, B. M. Mazoyer, P. G. Coxson, E. M. Salmeron, G. J. Klein, B. W. Reutter, and T. F. Budinger. Notes on RFIT: A program for fitting compartmental models to region-of-interest dynamic emission tomographic data. Report LBL-37621, Lawrence Berkeley Laboratory, 1995.
2. G. J. Klein, J. Malik, and J. Shi. Tri-level segmentation of mri brain data using normalized cuts. Report LBNL41539, Lawrence Berkeley National Laboratory, 1998.
3. R. H. Huesman, G. J. Klein, B. W. Reutter, and T. F. Budinger. Preliminary studies of cardiac motion in positron emission tomography. Report LBNL41433, Lawrence Berkeley National Laboratory, 1998.
4. G. J. Klein. Deformable models for volume feature tracking. Report LBNL-43257, Lawrence Berkeley National Laboratory, 1999. (Ph.D. Thesis).