

Joseph P. Stitt

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Educational Background:

The Pennsylvania State University Bioengineering with minor in Electrical Engineering, Ph.D., 1999 Thesis title: "Applications of statistical signal processing and digital image processing in the development of a mathematical model relating chemosensory electrophysiology and feeding behavior in *Manduca sexta*."

The Pennsylvania State University Computer Engineering, Master of Science, 1994.
Thesis title: "Associative Memory: A Comparison of Conventional SIMD Models and Neural Network Models."

The Pennsylvania State University Electrical Engineering, Bachelor of Science in Electrical Engineering, 1989.

Teaching Experience:

EE 455 - Digital Image Processing. - 1994
BBH 596 – Design and Implementation of Digital Imaging System.- 2003
MatSci 597F – Ultrasonic Transducer Design and Imaging.- 2003
BBH 597A – Introduction to MATLAB for Behavioral Scientists.- 2004

Work Experience:

Pennsylvania State University, 10/91 to Present

Research Associate 08/2000 – Present
Applied Research Laboratory; Materials Research Institute & Center for
Nanoscale Science; Graduate Faculty in the Department of Biobehavioral Health

Research Engineer -09/99 – 07/2000 Bioengineering Department –

Research Assistant –Bioengineering and Entomology Department -
09/96 to 08/99.

Computer Network Coordinator – Entomology and Dairy and Animal Science
Departments - 10/91 to 08/96.

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North American Refractories Company, 9/89 to 05/92.

Consultant

Advise and assist programmer/analysts with database design and implementation of input and query software. Advise on installation and configuration of Novell Networking system.

Allied-Signal Corporation - North American Refractories Company, 6/82 to 08/89.

Quality Assurance Engineer

Field Applications Engineer

Professional Organizations:

Institute of Electrical and Electronic Engineers (IEEE) –

Member Engineering in Medicine and Biology Society

Signal Processing Society

Member of the Signal Processing and Pattern Recognition program committee of the International Association of Science and Technology for Development.

Honors and Awards:

1996 Hershey Medical Center Bioengineering
Creative Ideas Contest - Second place.

1998 IEEE Northeast Bioengineering Conference
- Honorable mention.

Peer Reviewed Publications:

Stitt, J. P., Tutwiler, R. L. & Shung, K. K. (2005). An analog high-frequency ultrasound beamformer with dynamic focus and aperture apodization. IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control. In preparation.

Stitt, J., Gaumond, R., Frazier, J. & Hanson, F. (2005). *Neural Spike Sorting with a Discrete Gaussian Approximation of the Bayes Classifier*. IEEE Transactions on Biomedical Engineering in preparation.

Tutwiler, R. L., Stitt, J. P. & Shung, K. K. (2005). *An Actuated Synthetic Array*. IEEE Transactions on Biomedical Imaging. In preparation.

Stitt, J., Frazier, J., Gaumond, R. & Hanson, F. (2005). *Chemosensory Inputs Regulating Feeding Behavior Output in Manduca sexta*. Journal of Comparative Physiology In Revision.

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- Lang, D. H., Sharkey, N. A., A. Lionikas, H. A. Mack, L. Larsson, G P. Vogler, D. J. Vandenberg, D. A. Blizard, J. T. Stout, J. P. Stitt, and G. E. McClearn. (2005) Adjusting Data to Body Size: A Comparison of Methods as Applied to Quantitative Trait Loci Analysis of Musculoskeletal Phenotypes. *Journal of Bone and Mineral Research*, Volume 20, Number 5, 2005, December 20, 2004.
- O'Connor, R. J., Stitt J. P., and Kozlowski, L. T. (2005). A digital image analysis system for identifying filter vent blocking on Ultra-Light cigarettes. *Cancer Epidemiology, Biomarkers and Prevention*. 14(2). February 2005.
- Young-Gyu, K., Challis, J. H., Stitt, J. P. & Newell, K., M. (2003). *Organization of Compensatory Postural Coordination Patterns*. *Journal of Motor Behavior*. 35, 325-342.
- Rowley, M., Stitt, J. P. & Hanson, F. E. (2003). *Image Analysis of Small Animal Feeding Behavior*. *Behavioral Research Methods, Instruments, and Computers*. 35: 447-451.
- Stitt, J. P., Tutwiler, R. L. & Lewis, A. S. (2002b). *Synthetic Aperture SONAR Image Segmentation using the Fuzzy C-means Clustering Algorithm*. *Journal of Underwater Acoustics*.
- Lewis, A. S., Stitt, J. P. & Tutwiler, R. L. (2002). *A Split/Merge Image Segmentation Algorithm for Detection of Targets in Range-Doppler Maps*. *International Journal of Robotics and Automation*. 35, 93-99.
- Stitt, J., Gaumont, R., Frazier, J. & Hanson, F. (1998b). *Action Potential Classifiers: A Functional Comparison of Template Matching, Principal Components Analysis, and an Artificial Neural Network*. *Chemical Senses* 23, 531-539.
- Stitt, J. P. (1994). *Associative Memory: A Comparison of Conventional SIMD Models and Neural Network Models*. Pennsylvania State University, Department of Computer Science and Engineering. Technical Report CSE-94-054.

Conference Papers and Abstracts:

- Stitt, J. P. and R. L. Tutwiler (2004e). "Implementation of a System using Reflective Tomographic Reconstruction for Breast Cancer Detection." Proceedings of the 26th Annual International Conference of the IEEE EMBS. 1: 1333-1336.
- Stitt, J. P., R. L. Tutwiler, Gopalan, V., Larsson, L. (2004d). "Toward Imaging the Dynamic Actin-Myosin Interaction using a Wet-Cell C-mode Near-Field Optical Microscope." Proceedings of the 26th Annual International Conference of the IEEE EMBS. 1: 5250-5253.

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- Stitt, J. P., O'Connor, R. J. & Kozlowski, L. T. (2003a). An Image Processing and Analysis Systems for Automatic Classification of Cigarette Filter Blockage. Engineering in Medicine and Biology society, 2003. Proceedings of the 25th Annual International Conference of the IEEE., 926-929.
- Stitt, J. P., Tutwiler, R. L., Ritter, T. A. & Shung, K. K. (2003b). *A High Frequency Ultrasound Actuated SyntheticAperture Array*. Engineering in Medicine and Biology society, 2003. Proceedings of the 25th Annual International Conference of the IEEE., 1168-1171.
- Stitt, J. P., Lang, T. C. & Sharkey, N. A. (2002a). Automatic estimation of the physical characteristics of tibia cross-sections. [Engineering in Medicine and Biology, 2002. 24th Annual Conference and the Annual Fall Meeting of the Biomedical Engineering Society] EMBS/BMES Conference, 2002. Proceedings of the Second Joint. 3, 2542-2543.
- Stitt, J. P., Tutwiler, R. L. & Shung, K. K. (2002c). *An improved four-focal zone high-frequency ultrasound analog beamformer*. Ultrasonics Symposium, 2002. Proceedings. 2002 IEEE. 1, 617-620.
- Stitt, J. P., Tutwiler, R. L. & Shung, K. K. (2002d). *A Improved High-Frequency Analog Beamformer with FourZone Dynamic Focus*. [Engineering in Medicine and Biology, 2002. 24th Annual Conference and the Annual Fall Meeting of the Biomedical Engineering Society] EMBS/BMES Conference, 2002. Proceedings of the Second Joint . 2, 939-940.
- Stitt, J. P., Tutwiler, R. L. & Shung, K. K. (2001). *A HighFrequency Analog Beamformer with Four-Zone Dynamic Focus*. Annals of Biomedical Engineering. 29, ABSTRACT.
- Stitt, J. P., Tutwiler, R. L. & Lewis, A. S. (2001a). *Fuzzy C-Means Image Segmentation of Side-Scan Sonar Images*. The Proceedings of 2001 IASTED International Symposium on Signal and Image Processing. 1, 27-32.
- Lewis, A. S., Tutwiler, R. L. & Stitt, J. P. (2001). *Automatic Parameter Selection for Split/Merge Processing of Side-Scan Sonar Images*. Proceedings of IASTED International Symposium on Measurement and Control.
- Stitt, J., Gaumond, R., Frazier, J. & Hanson, F. (1999). *Neural spike classification utilizing both amplitude and temporal information*. Proceedings of the First Joint BMES/EMBS Conference. 1, 411.
- Stitt, J. P., Gaumond, R. P., Frazier, J. L. & Hanson, F. E. (1998a). Automated Analysis of Feeding Behavior in Small Animals. In Proc. of the IEEE 24th Annual Northeast Bioe. Conf., pp. 120-122, Hershey, PA.
- Stitt, J. P., Gaumond, R. P., Frazier, J. L. & Hanson, F. E. (1997a). An artificial neural network for neural spike classification. In Bioengineering Conference, 1997.,

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- Proceedings of the IEEE 1997 23rd Northeast., vol. 1, pp. 15-16.
- Stitt, J. P., Gaumond, R. P., Frazier, J. L. & Hanson, F. E. (1997b). A Comparison of Neural Spike Classification Techniques. Proceedings of the 19th Annual Conference of the IEEE Engineering in Medicine and Biology Society. 3, 1092 - 1094.
- Stitt, J. P., Frazier, J. L. & Hanson, F. E. (1996). *A system for analyzing co-channel sensory data from insect taste cells*. Annals of Biomedical Engineering. 24, ABSTRACT.
- Hanson, F. E., Frazier, J., Stitt, J. & Chyb., S. (1996). *Modeling the insect feeding decision system: A new approach utilizing fuzzy system theory*. Entomologia experimentalis Et applicata 80, 109-112.
- Stitt, J. P., Chyb, S., Frazier, J. L. & Hanson, F. E. (1994). *Analysis of sensory information using artificial neural networks and fuzzy logic*. Engineering in Medicine and Biology Society, 1994. Engineering Advances: New Opportunities for Biomedical Engineers. Proceedings of the 16th Annual International Conference of the IEEE. 2, 1063 - 1064.
- Stitt, J., Chyb, S., Hanson, F. & Frazier, J. (1993). *A Neural Network Model of an Insect's Food Choice System*. Annual Meeting of the Association for Chemoreception Sciences.