LANCE WILLIAMS

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Education

Ph.D. Computer Science, University of Massachusetts, Amherst, MA, 1994.

M.S. Computer and Information Science, University of Massachusetts, Amherst, MA, 1988.

B.S. with Honors in Computer Science, Pennsylvania State University, University Park, PA, 1985.

Employment History

1997–present. University of New Mexico, Albuquerque, NM. Department of Computer Science. Current title: Associate Professor.

1993–1999. NEC Research Institute, Princeton, NJ. Post-doctoral Scientist, 1993–1997; Visiting Scientist, Summers 1998, 1999.

May 1996. Dept. of Applied Mathematics, Weizmann Institute for Science, Rehovot, Israel. Visiting Scientist.

Selected Publications

Williams, L.R., Evolution of Tail-Call Optimization in a Population of Self-Hosting Compilers, *European Conf. on Artificial Life (ECAL '13)*, Taormina, Sicily, 2013.

Williams, L.R., Robust Evaluation of Expressions by Distributed Virtual Machines, *Unconventional and Natural Computation (UCNC '12)*, Orleans, France, 2012.

Ackley, D.H., Cannon, D.C. and L.R. Williams, A Movable Architecture for Robust Spatial Computing, *The Computer Journal*, Nov. 2012.

Williams, L.R., Artificial Cells as Reified Quines, *European Conf. on Artificial Life (ECAL '11)*, Paris, France, 2011.

Abbott, R.G. and L.R. Williams, Multiple Target Tracking with Lazy Background Subtraction and Connected Components Analysis, *Machine Vision and Applications* 20(2), pp. 93-101, 2009.

Zhang, J., Steinberg, S.L., Wilson, B.S, Oliver, J.M., and L.R. Williams, Markov Random Field Modeling of the Distribution of Proteins on Cell Membranes, *Bulletin of Mathematical Biology* 70(1), pp. 297-321, 2008.

Wiley, K. and L.R. Williams, Representing Interwoven Surfaces in $2\frac{1}{2}$D Drawings, *IEEE Computer Graphics and Applications* 27(4), pp. 70-83, 2007.

Yang, S., Raymond-Stintz, M.A., Ying, W., Zhang, J., Steinberg, S.L., Williams, L.R., Oliver, J.M., and B.S. Wilson, Mapping ErdB Receptors on Breast Cancer Cell Membranes During Signal Transduction, *Journal of Cell Science* 120, pp. 2763-2773, 2007.

Solis, K.J., Williams, L.R., Swartzenruber, B.S., and S.M. Han, Addimer Chain Structures: Metastable Precursors to Island Formation on Ge-Si(001)-($2 \times$ n) Alloyed Surface, *Surface Science* 601, pp. 172-177, 2007.

Zweck, J.W. and L.R. Williams, Euclidean Group Invariant Computation of Stochastic Completion Fields Using Shiftable-Twistable Functions, *Journal of Mathematical Imaging and Vision* 21(2), pp. 135-154, 2004.

Williams, L.R., and J.W. Zweck, A Rotation and Translation Invariant Discrete Saliency Network, *Biological Cybernetics* 88(1), pp. 2-10, 2003.

Mahamud, S., Williams, L.R., Thornber, K.K., and K. Xu, Segmentation of Multiple Salient Closed Contours from Real Images, *IEEE Trans. on Pattern Analysis and Machine Intelligence* 25(4), pp. 433-444, 2003.

Williams, L.R. and K.K. Thornber, Orientation, Scale, and Discontinuity as Emergent Properties of Illusory Contour Shape, *Neural Computation* 13(8), pp. 1683-1711, 2001.

Thornber, K.K. and L.R. Williams, Characterizing the Distribution of Completion Shapes with Corners Using a Mixture of Random Processes, *Pattern Recognition* 33, pp. 543-553, 2000.

Williams, L.R. and K.K. Thornber, A Comparison of Measures for Detecting Natural Shapes in Cluttered Backgrounds, *Intl. Journal of Computer Vision* 34 (2/3), pp. 81-96, 1999.

Williams, L.R. and D.W. Jacobs, Stochastic Completion Fields: A Neural Model of Illusory Contour Shape and Salience, *Neural Computation* 9(4), pp. 837-858, 1997.

Current Departmental Service

Undergraduate Committee Chair

ABET Committee Chair

Lecturer Search Committee Chair

Collaborators and Students

Rob Abbott (SNL), Dave Ackley (UNM), Daniel Cannon (UNM), Sang Han (UNM), Jan Oliver (UNM), Kyle Solis (UNM), Torsten Staab (LANL), Darko Stefanovic (UNM), Stan Steinberg (UNM), Milan Stojanovic (Columbia), Brian Swartzenruber (SNL), Keith Wiley (UNM), Bridget Wilson (UNM), Jun Zhang (UNM)

Fields of Interest

Computer vision, digital image processing, computational neuroscience, mathematical biology, functional programming, spatial computing, artificial life, virtual worlds.