

**Curriculum Vitae: Margaret J. Eppstein (last updated 2/4/2020)**

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## Education

**B.S. in Zoology, with High Honor** (gpa 3.91)  
Honors College, Michigan State University, 1978.

**Graduate Study in Zoology** (gpa 4.0)  
University of Washington, 1980-81.  
University of Vermont, 1981-82.

**M.S. in Computer Science** (gpa 4.0)  
University of Vermont, 1983.

**Ph.D. in Civil & Environmental Engineering** (gpa 3.97)  
Dissertation: "*Efficient Data Inversion for Large Multi-Dimensional Problems Using an Approximate Extended Kalman Filter with Data Driven Zonation*",  
Advisor: Dr. David E. Dougherty, University of Vermont, 1997.

## Workshops and Summer Schools

1. New England Complex Systems Institute Summer School (5-day): Complex Physical, Biological and Social Systems, MIT, Cambridge, MA, June 2005.
2. New England Complex Systems Institute Summer School (5-day): Modeling, Networks and Evolution of Complex Systems, MIT, Cambridge, MA, June 2005.
3. New Directions in Bioinformatics and Biotechnology Workshop, Chautauqua Short Course #65 (3-day), RPI, July 2002.
4. NPACI Parallel Computing Workshop (1-day), San Diego Supercomputer Center, San Diego, CA. January, 2002
5. Inter-Institute Workshop on In Vivo Optical Imaging at NIH (2-day), October, 1999.
6. Parallel Virtual Machine Workshop (1-day) at the 6<sup>th</sup> SIAM Conference on Parallel Processing for Scientific Computing, Norfolk, VA, March, 1993.

7. Follow-up Parallel Processing Workshop (4-day), Colgate University, Hamilton, NY. 1992.
8. Parallel Processing for Undergraduate Educators (2-week), Colgate University, Hamilton, NY. 1991.
9. Workshop for the Foundations of Artificial Intelligence (2-day), New Mexico State University, Las Cruces, NM. 1986.

## Awards and Honors

- Best Paper Award, Genetic and Evolutionary Computation Conference, 2017.
- Nominated for the U.V.M. Kroepsch-Maurice Teaching Award, 2012, 2017.
- Best Paper Award, UVM Transportation Research Center Annual Symposium, 2010.
- Best Student Paper Award, IEEE Symposium on Artificial Life, 2007.
- The American Association of Physicists in Medicine Sylvia Sorkin Greenfield Award for the best paper (other than radiation dosimetry) published in Medical Physics in 2004.
- Outstanding Student Paper Award, American Geophysical Union, Fall 1996.
- American Association of University Women Career Development Award, 1993.
- Finalist for the U.V.M. Kroepsch-Maurice Teaching Award, 1992.
- U.V.M. graduate student travel mini-grants, 1982 and 1994.
- National Science Foundation 3-year graduate fellowship, 1980-1983.
- Initiated as Member, Upsilon Pi Epsilon, Computer Science Honor Society, 1983.
- Member, Michigan State University Honor's College, 1974-1979
- Initiated as Member Phi Kappa Phi Honor Society, 1978.

## Professional Positions

*(in reverse chronological order)*

- 2018-present **Research Professor and Professor Emerita of Computer Science**, University of Vermont, Burlington, Vermont.
- 2014-2018 **Professor of Computer Science**, University of Vermont, Burlington, Vermont.
- 2012-2018 **Chair of Computer Science**, University of Vermont, Burlington, Vermont.
- 2008-2014 **Associate Professor (*Primary Appointment*)**, Department of Computer Science, University of Vermont, Burlington, Vermont.
- 2006-2010 **founding Director**, Complex Systems Center, University of Vermont, Burlington, Vermont.
- 2006-present **Adjunct Member**, Computational Genetics Laboratory, Dartmouth College, Lebanon, NH.

- 2005-present **Assistant Professor (*Secondary Appointment*)**, Department of Biology, University of Vermont, Burlington, VT.
- 2002-2008 **Assistant Professor (*Primary Appointment*)**, Department of Computer Science, University of Vermont, Burlington, Vermont.
- 2001-2003 **Adjunct Assistant Professor**, Department of Chemical Engineering, Texas A&M University, College Station, TX.
- 2001-present **Member**, Vermont Cancer Center.
- 1997-2002 **Research Assistant Professor (*Primary Appointment 1998-2002*)**, Department of Computer Science, University of Vermont, Burlington, VT.
- 1998-2003 **Research Assistant Professor (*Secondary Appointment*)**, Department of Civil & Environmental Engineering, University of Vermont, Burlington, VT.
- 1983-2001 **Lecturer (*Primary Appointment 1983-1998*)**, Department of Computer Science, University of Vermont, Burlington, VT.
- 1993-1997 **Graduate Research Assistant**, Department of Civil & Environmental Engineering, University of Vermont, Burlington, VT.
- 1990 **Consultant**, Digital Equipment Corporation, S. Burlington, VT.
- 1987-1988 **Bioinformatics Software Engineer**, International Biotechnologies, Inc., New Haven, CT (telecommuted).
- 1986 **System Graphics Software Engineer**, Vermont Microsystems, Inc., Winooski, VT.
- 1986 **Consultant**, Computing Research Laboratory, New Mexico State University, Las Cruces, NM.
- 1982 **Graduate Teaching Assistant**, Department of Computer Science, University of Vermont, Burlington, VT.
- 1982 **Programmer**, Academic Computing Center, University of Vermont, Burlington, VT.
- 1981-1982 **Graduate Teaching Assistant**, Department of Zoology, University of Vermont, Burlington, VT.
- 1979-1980 **Research Associate**, Department of Zoology, Michigan State University, E. Lansing, MI.
- 1977 **Undergraduate Teaching Assistant**, Department of Mathematics, Michigan State University, E. Lansing, MI.

- 1975-1979 **Archaeologist** for various institutions, including the Department of Anthropology at Michigan State University, the Tennessee Valley Authority, the State of Tennessee, and the U.S. Army Corps of Engineers.

## Research

### [Google Scholar Profile](#)

Note: Students and post-docs who conducted research or class projects under my supervision or co-supervision leading to these publications are indicated with underlining.

## Publications (in reverse chronological order)

### Refereed Journal Publications (in review or invited revision)

1. Laurence A. Clarfeld and **Margaret J. Eppstein**, “Group-Testing on Hypergraphs with Variable-Cost Tests: A Power Systems Case Study”, *IEEE Transactions on Network Science and Engineering*, in review, (draft version posted on ArXiv at <https://arxiv.org/abs/1909.04513>), 2019.

### Refereed Journal Publications (published or accepted)

1. Lindsay Ross, Christopher M. Danforth, **Margaret J. Eppstein**, Laurence A. Clarfeld, Brigitte Durieux, Cailin Gramling, Laura Hirsch, Donna M. Rizzo, Robert Gramling, “Story Arcs in Serious Illness: Natural Language Processing features of Palliative Care Conversations”, *Patient Education and Counseling*, available online <https://doi.org/10.1016/j.pec.2019.11.021>, 2019.
2. Laurence A Clarfeld, Paul DH Hines, Eric M Hernandez, **Margaret J Eppstein**, “Risk of Cascading Blackouts Given Correlated Component Outages”, *IEEE Transactions on Network Science and Engineering*, in press, DOI 10.1109/TNSE.2019.2910837, (posted on ArXiv at <https://arxiv.org/pdf/1901.03304.pdf>), 2019.
3. C. Brandon Ogbunugafor\* and **Margaret J. Eppstein\***, Genetic Background Modifies the Topography of a Fitness Landscape, Influencing the Dynamics of Adaptive Evolution, *IEEE Access* Vol 7, pp. 113675-113683, 2019. \*These authors contributed equally
4. Hanley, J.P., Rizzo, D.M, Buzas, J.S., and **Eppstein., M.J.** “A Tandem Evolutionary Algorithm for Identifying Causal Rules from Complex Data”, *Evolutionary Computation*, pp. 1-32 ([https://doi.org/10.1162/evco\\_a\\_00252](https://doi.org/10.1162/evco_a_00252)), 2019.
5. Durieux B, Gramling C, Manukyan V, Clarfeld L, Ryan A, Ross L, Niland M, Rizzo DM, **Eppstein MJ**, Alexander SC, Gramling R. Identifying *Connectional Silence* in Palliative Care Consultations: A Tandem Machine-Learning and Human Coding Method, *Journal of Palliative Medicine* 21 (12): 1755-1760, 2018.
6. Manukyan V, Durieux BN, Gramling CJ, Clarfeld LA, Rizzo DM, **Eppstein MJ**, Gramling R. Automated Detection of Conversational Pauses from Audio Recordings of Serious Illness Conversations in Natural Hospital Settings, *Journal of Palliative Medicine* 21 (12), 1724-1728, 2018.

7. Thomas, Alexander W., Richard Watts, Christopher G. Filippi, Joshua P. Nickerson, Trevor Andrews, Gregory Lieberman, Magdalena R. Naylor, **Margaret J. Eppstein**, and Kalev Freeman. "Dynamic changes in diffusion measures improve sensitivity in identifying patients with mild traumatic brain injury." *PloS one* 12, no. 6 (2017): e0178360. [Available online.](#)
8. Ogbunugafor, C.B.\* and **Eppstein, M.J.\*** "Competition along trajectories governs adaptation rates towards antimicrobial resistance", *Nature Ecology & Evolution*, Vol. 1, paper 0007, 2016. \*These authors contributed equally. [Link to Article.](#) [Link to Behind the Paper blog.](#)
9. Manukyan, N., **Eppstein, M.J.**, and Buzas, J.S., "Tunably rugged landscapes with known maximum and minimum", *IEEE Transactions on Evolutionary Computation*, 20(2):263-274, 2016. [\[pdf\]](#)
10. Garcia-Bernarda, J. and **Eppstein, M.J.**, "Evolving modular genetic regulatory networks with a recursive, top-down approach", *Systems and Synthetic Biology*, 9: 179-189, 2015. [\[pdf\]](#)
11. **Eppstein, M.J.**, Rizzo, D.M., Lee, Brian Y.H., Krupa, J., and Manukyan, N. "Using national survey respondents as consumers in an agent-based model of plug-in hybrid vehicle adoption", *IEEE Access*, 3:457-468, 2015. [\[pdf\]](#)
12. Rezaei, P., Hines, P.D.H., and **Eppstein, M.J.** "Estimating Cascading Failure Risk with Random Chemistry", *IEEE Transactions on Power Systems*, 30(5):2726-2735, 2015. [\[pdf\]](#)
13. Krupa, J.S., Rizzo, D.M., **Eppstein, M.J.**, Lanute, D.B., Gaalema, D.E., Lakkaraju, K., and Warrender, C.E., "Analysis of a consumer survey on plug-in hybrid electric vehicles", *Transportation Research Part A: Policy and Practice*, 64, 14-31, 2014. [Available online](#) DOI: 10.1016/j.tra.2014.02.019. [\[pdf\]](#)
14. Chichakly, K.J., Bowden, W.B., and **Eppstein, M.J.**, "Minimization of Cost, Sediment Load, and Sensitivity to Climate Change in a Watershed Management Application", *Environmental Modelling & Software*, 50:158-168, 2013. [\[pdf\]](#)
15. Manukyan, N., **Eppstein, M.J.**, and Horbar, J. "Team Learning for Healthcare Quality Improvement", *IEEE Access*, 1:545-557, 2013. [\[pdf\]](#)
16. Chichakly, K.J. and **Eppstein, M.J.**, "Discovering Design Principles from Dominated Solutions", *IEEE Access*, 1:275-289, 2013. [\[pdf\]](#)
17. Manukyan, N., **Eppstein, M.J.**, Horbar, J.D., Leahy, K.A., Kenny, M.J., Mukherjee, S., and Rizzo, D.M. "Exploratory Analysis in Time-Varying data sets: a Healthcare Network Application", *International Journal of Advanced Computer Science*, 3(7):322-329,2013. [\[pdf\]](#)
18. **Eppstein, M.J.**, Horbar, J.D, Buzas, J.S., and Kauffman, S.A., "Searching the clinical fitness landscape", *PLoS ONE*, 7(11):e49901, 2012. [\[pdf\]](#)
19. Manukyan, N., **Eppstein, M.J.**, and Rizzo, D.M., "Data-Driven Cluster Reinforcement and Visualization in Sparsely-Matched Self-Organizing Maps", *IEEE Transactions on Neural Networks*, 23(5):846-852, 2012. [\[pdf\]](#)
20. **Eppstein, M.J.** and Hines, P.D.H., "A 'Random Chemistry' Algorithm for Identifying Collections of Multiple Contingencies that Initiate Cascading Failure." *IEEE PES Transactions on Power Systems*, 27(3):1698-1705, 2012. [\[pdf\]](#)



21. **Eppstein, M.J.**, Grover, D.K., Marshall, J.S., and Rizzo, D.M. "An agent-based model to study market penetration of plug-in hybrid electric vehicles", *Energy Policy*, 39: 3789-3802, 2011. [\[pdf\]](#)
22. Payne, J.L., Dodds, P.S., and **Eppstein, M.J.** "Information Cascades on Degree-Correlated Random Networks", *Physical Review E*, **80**, 026125, 2009. [\[pdf\]](#)
23. **Eppstein, M.J.**, Payne, J. L., and Goodnight, C.J., "Underdominance, Multiscale Interactions, and Self-Organizing Barriers to Gene Flow", *J. Artificial Evolution and Applications (special issue on Biological Applications)*, Volume 2009, Article ID 725049, 13 pages, 2009. (DOI: 10.1155/2009/725049). [\[pdf\]](#)
24. Payne, J.L. and **Eppstein, M.J.**, "Evolutionary Dynamics on Scale-Free Interaction Networks", *IEEE Transactions on Evolutionary Computation*, 13 (4):895-912, 2009 (DOI 10.1109/TEVC.2009.2019825). [\[pdf\]](#)
25. Payne, J.L. and **Eppstein, M.J.** "Pair Approximations of Takeover Dynamics in Regular Population Structures", *Evolutionary Computation*, 17(2), pp. 203-229, 2009), 2009. [\[pdf\]](#)
26. **Eppstein, M.J.**, Payne, J.L., White, B.C., and Moore, J.H. "Genomic mining for complex disease traits with 'Random Chemistry'", *Genetic Programming and Evolvable Machines (special issue on Medical Applications)*, 8:395-411, 2007. (DOI 10.1007/s10710-007-9039-5) [\[pdf\]](#)
27. Zhu, B., **Eppstein, M.J.**, Sevick-Muraca, E.M., and Godavarty, A. "Noise pre-filtering techniques in fluorescence-enhanced optical tomography", *Optics Express*, **15**(18):11285-11300, 2007. [\[pdf\]](#)
28. **Eppstein, M.J.** and Molofsky, J. "Invasiveness in plant communities with feedbacks". *Ecology Letters*, **10**:253-263, 2007. [\[pdf\]](#)
29. **Eppstein, M.J.**, Bever, J.D., and Molofsky, J., "Spatio-temporal community dynamics induced by frequency dependent interactions", *Ecological Modelling*, **197**:133-147, 2006. [\[pdf\]](#)
30. Fedele, F., **Eppstein, M.J.**, Laible, J.P., Godavarty, A., and Sevick-Muraca, E.M., "Fluorescence Photon Migration by the Boundary Element Method", *J. Computational Physics*, **210**(1):109-132, 2005. [\[pdf\]](#)
31. Godavarty, A., Sevick-Muraca, E.M., and **Eppstein, M.J.** "Three-dimensional fluorescence lifetime tomography", *Medical Physics*, **32**(4): 992-1000, 2005. [\[pdf\]](#)
32. Godavarty, A., **Eppstein, M.J.**, Zhang, C., and Sevick-Muraca, E.M., "Detection of single and multiple targets in tissue phantoms using fluorescence-enhanced optical imaging", *Radiology*, **235**: 148-154, 2005. [\[pdf\]](#)
33. Godavarty, A., Thompson, A.B., Roy, R., Gurfinkel, M., **Eppstein, M.J.**, Zhang, C., and Sevick-Muraca, E.M., "Diagnostic imaging of breast cancer using fluorescence-enhanced optical tomography: phantom studies," *J. Biomed. Optics*.: Special edition on Biomedical Optics and Women's Health **9**:488-496, 2004. [\[pdf\]](#)
34. Godavarty, A., Zhang, C., **Eppstein, M.J.**, and Sevick-Muraca, E.M., "Fluorescence-enhanced optical imaging of large phantoms using single and simultaneous dual point illumination geometries", *Medical Physics* **31**(2):183-190, 2004. (Awarded the American Association of Physicists in Medicine Sylvia Sorkin Greenfield [Award for the best paper](#) published in Medical Physics in 2004) [\[pdf\]](#)

35. **Eppstein, M.J.**, Fedele, F., Laible, J.P., Zhang, C., Godavarty, A., and Sevick-Muraca, E.M., "A comparison of exact and approximate adjoint sensitivities in fluorescence tomography", *IEEE Transactions on Medical Imaging*, **22**(10):1215-1223, 2003. [\[pdf\]](#)
36. Godavarty, A., **Eppstein, M.J.**, Zhang, C., Thompson, A.B., Gurfinkel, M., Theru, S., and Sevick-Muraca, E.M., "Fluorescence-enhanced optical imaging in large tissue volumes using a gain modulated ICCD camera", *Physics in Medicine and Biology*, **48**:1701-1720, 2003. [\[pdf\]](#)
37. Fedele, F. Laible, J. P., and **Eppstein, M.J.**, "Coupled complex adjoint sensitivities for frequency-domain fluorescence tomography: theory and vectorized implementation", *J Computational Physics*, **187**(2):597-619, 2003. [\[pdf\]](#)
38. Godavarty, A., Hawrysz, D.J., Roy, R., Sevick-Muraca, E.M., and **Eppstein, M.J.**, "The influence of the refractive index-mismatch at the boundaries measured in fluorescence-enhanced frequency-domain photon migration imaging", *Optics Express*, **10**(15):653:662, 2002. [\[pdf\]](#)
39. **Eppstein, M.J.**, Hawrysz, D.J., Godavarty, A., and Sevick-Muraca, E.M., "Three-dimensional, Bayesian image reconstruction from sparse and noisy data sets: Near-infrared fluorescence tomography", *Proc. Natl. Acad. Sci. USA*, **99**(15):9619-9624, 2002. [\[pdf\]](#)
40. Hawrysz, D.J., **Eppstein, M.J.**, Lee, J., and Sevick-Muraca, E.M., "Error Consideration in Contrast-Enhanced Three Dimensional Optical Tomography", *Optics Letters*, **26**(10):704-706, 2001. [\[pdf\]](#)
41. **Eppstein, M.J.**, Dougherty, D.E., Hawrysz, D.J., Sevick-Muraca, E.M., "3-D Bayesian optical image reconstruction with domain decomposition", *IEEE Transactions on Medical Imaging*, **20**(3):147-163, 2001. [\[pdf\]](#)
42. **Eppstein, M.J.**, Dougherty, D.E., Troy, T.L, and Sevick-Muraca, E.M., "Biomedical optical tomography using dynamic parameterization and Bayesian conditioning on photon migration measurements", *Applied Optics*, **38**:2138-2150, 1999 (cover article). [\[pdf\]](#)
43. **Eppstein, M.J.** and Dougherty, D.E., "Efficient 3-D data inversion: Soil characterization and moisture monitoring from crosswell GPR at a Vermont test site", *Water Resources Research*, **34**(8):1889-1900, 1998. [\[pdf\]](#)
44. **Eppstein, M.J.** and Dougherty, D.E., "Optimal 3-D travelttime tomography", *Geophysics*, **63**(3):1053-1061, 1998. [\[pdf\]](#)
45. **Eppstein, M.J.** and Dougherty, D.E., "Simultaneous estimation of transmissivity values and zonation", *Water Resources Research*, **32**(11):3321-3336, 1996. [\[pdf\]](#)
46. **Eppstein, M.J.** and Dougherty, D.E., "A comparative study of PVM workstation cluster implementations of a two-phase subsurface flow model", *Adv. In Water Resources*, **17**:181-195, 1994. [\[pdf of abstract\]](#)
47. Heinrich, B. and **Heinrich (née Eppstein), M.J.E.**, "The pit-trapping foraging strategy of the ant lion, *Myrmeleon immaculatus*", *Behav. Ecol. and Sociobiol.*, **14**:151-160, 1984. [\[pdf\]](#)
48. Heinrich, B. and **Heinrich (née Eppstein), M.J.E.**, "Size and caste in temperature regulation by bumblebees", *Phys. Zool.*, **56**:552-562, 1983. [\[link\]](#)
49. Heinrich, B. and **Heinrich (née Eppstein), M.J.E.**, "Heterothermia in foraging workers and drones of the bumblebee *Bombus terricola*", *Phys. Zool.*, **56**: 563-567, 1983. [\[link\]](#)

**Refereed Conference Proceedings and Extended Abstracts (published or accepted).**

1. Clarfeld, L.A., **Eppstein, M.J.**, Hines, P.D.H., and Hernandez, E.M. "Assessing Risk from Cascading Blackouts Given Correlated Component Failures", 20<sup>th</sup> *Power Systems Computation Conference (PSCC)*, June, 2018. [\[pdf\]](#)
2. **Eppstein, M.J.** and Ogbunugafor, C.B. "Quantifying Deception: A Case Study in the Evolution of Antimicrobial Resistance", *Proceedings of the 2016 Genetic and Evolutionary Computation Conference (GECCO)*, p. 101-108, July 2016 (best-paper award).[\[pdf\]](#)
3. Hanley, J.P., **Eppstein, M.J.**, Buzas, J.S., and Rizzo, D.M. "Evolving Probabilistically Significant Epistatic Classification Rules for Heterogeneous Big Datasets", *Proceedings of the 2016 Genetic and Evolutionary Computation Conference (GECCO)*, p. 445-452 July 2016. (Nominated for a best-paper award). [\[pdf\]](#)
4. Hinckley, D.H., Hitt, D.L., and **Eppstein, M.J.** "Evolutionary optimization of satellite formation topology over a region of interest. AIAA Guidance, Navigation, and Control Conference, AIAA SciTech, (AIAA 2015-1554). <http://dx.doi.org/10.2514/6.2015-1554>
5. Rezaei, P., **Eppstein, M.J.**, and Hines, P.D.H., "Rapid assessment, visualization, and mitigation of cascading failure risk in power systems", *Proceedings of the 48<sup>th</sup> Hawaii International Conference on Systems Sciences (HICSS)*, paper #514, January, 2015. [\[pdf of preprint\]](#)
6. Hinckley, D., Hitt, D. and **Eppstein, M.** "Evolved Non-Keplerian Spacecraft Trajectories for Near-Earth Orbital Maneuvers," AIAA Paper 2014-4222, 2014. [\[pdf of preprint\]](#)
7. Hinckley, D.W. Jr., Zieba, K., Hitt, D.L., and **Eppstein, M.J.** "Evolved Spacecraft Trajectories for Low Earth Orbit", *Proceedings of the 2014 Genetic and Evolutionary Computation Conference (GECCO)*, 1127-1134, July 2014. [\[pdf\]](#)
8. Garcia-Bernardo, J. and **Eppstein, M.J.**, "Evolving Small GRNs with a Top-Down Approach", *Proceedings Companion of the 2014 Genetic and Evolutionary Computation Conference (GECCO)*, pp. 41-42, July 2014. [\[pdf\]](#) A full version of this paper is available [here](#).
9. Manukyan, N., **Eppstein, M.J.**, Buzas, J.S. "NM Landscapes: Beyond NK", *Proceedings Companion of the 2014 Genetic and Evolutionary Computation Conference (GECCO)*, pp. 203-204, July 2014. [\[pdf\]](#)
10. Rezaei, P., Hines, P., **Eppstein, M.J.**, "Estimating Cascading Failure Risk: Comparing Monte Carlo Sampling and Random Chemistry," *Proceedings of the IEEE Power and Energy Society General Meeting*, July 2014. doi: 10.1109/PESGM.2014.6939392
11. Chichakly, K.J. and **Eppstein, M.J.** "Improving Uniformity of Solution Spacing in Biobjective Evolution", 2-page poster paper, *Proceedings Companion of the 2013 Genetic and Evolutionary Computation Conference (GECCO)*, pp. 87-88, 2013. [\[pdf\]](#)
12. Manukyan, N., **Eppstein, M.J.**, and Horbar, J.D. "Team Structure and Quality Improvement in Collaborative Environments", *Proceedings of Collaborative Technologies and Systems (CTS)*, 2013 International Conference, IEEE 2013. [\[pdf\]](#)
13. Hines, P.D.H., Dobson, I., Cortilla-Sanchez, E., **Eppstein, M.**, "'Dual Graph' and 'Random Chemistry' Methods for Cascading Failure Analysis, *Proceedings of the 46<sup>th</sup> Hawaii*

- International Conference on Systems Sciences (HICSS)*, pp. 2141-2150, 2013. [\[pdf\]](#) DOI [10.1109/HICSS.2013.1](https://doi.org/10.1109/HICSS.2013.1)
14. [Krupa, J.S.](#), [Chatterjee, S.](#), [Eldridge, E.](#), Rizzo, D.M., and **Eppstein, M.J.** "Evolutionary Feature Selection for Classification: A Plug-In Hybrid Vehicle Adoption Application", *Proceedings of the 2012 Genetic and Evolutionary Computation Conference (GECCO)*, pp. 1111-1118, 2012. [\[pdf\]](#)
  15. [Manukyan, N.](#), **Eppstein, M.J.**, Horbar, J.D., Leahy, K.A., Kenny, M.J., [Mukherjee, S.](#) and Rizzo, D.M. "Evolutionary Mining for Multivariate Associations in Large Time-Varying data sets: a Healthcare Network Application", extended abstract, *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, pp. 1547-1548, 2012. [\[pdf\]](#)
  16. [Mukherjee, S.](#), and **Eppstein, M.J.** Differential Evolution of Constants in Genetic Programming Improves Efficacy and Bloat, late breaking paper, *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, pp. 625-626, 2012. [\[pdf\]](#)
  17. [Pellon, M.B.](#), **Eppstein, M.J.**, [Besaw, L.E.](#), [Grover, D.K.](#), Rizzo, D.M., and Marshall, J.S., "An Agent-Based Model for Estimating Consumer Adoption of PHEV Technology", Transportation Research Board (TRB), 10-3303, 2010. [\[pdf\]](#)
  18. [Besaw, L.E.](#), Rizzo, D.M., **Eppstein, M.J.**, [Pellon, M.B.](#), [Grover, D.K.](#), Marshall, J.S., "Up-scaling Agent-Based Discrete-Choice Transportation Models using Artificial Neural Networks", Transportation Research Board (TRB), 10-3130), 2010. [\[pdf\]](#)
  19. **Eppstein, M.J.** and [Haake, P.](#), "Very Large Scale ReliefF for Genome-Wide Association Analysis", *IEEE Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)*, pp. 112-119, 2008. [\[pdf\]](#)
  20. [Payne, J.L.](#) and **Eppstein, M.J.** "The influence of Scaling and Assortativity on Takeover Times in Scale-Free Topologies", *Genetic and Evolutionary Computation Conference (GECCO)*, pp. 241-248, 2008. Nominated for a Best-Paper Award.
  21. [Payne, J.L.](#) and **Eppstein, M.J.** "Parameterizing Pair Approximations for Takeover Dynamics", *Genetic and Evolutionary Computation Conference (GECCO)*, late-breaking papers, pp. 2199-2204, 2008.
  22. [Payne, J.L.](#) and **Eppstein, M.J.** "Using Pair Approximations to Predict Takeover Dynamics in Spatially Structured Populations", *Genetic and Evolutionary Computation Conference (GECCO)*, late-breaking papers pp. 2557-2563, 2007.
  23. [Payne, J.L.](#) and **Eppstein, M.J.**, "Takeover Times on Scale-Free Topologies", *Genetic and Evolutionary Computation Conference (GECCO)*, pp. 308-315, 2007.
  24. [Payne, J.L.](#), **Eppstein, M.J.**, and Goodnight, C.J. "Sensitivity of Self-Organized Speciation to Long Distance Dispersal", *Proceedings of the 2007 IEEE Symposium on Artificial Life (Alife'07)*, pp. 1-7, 2007 (best student paper award). [\[pdf\]](#)

25. Payne, J.L. and **Eppstein, M.J.**, "Why your mates shouldn't date", poster and published extended abstract accepted for *Genetic and Evolutionary Computation Conference (GECCO)*, 2007.
26. DeHaas, D., Craig, J., Rickert, C., Haake, P., Stor, K., **Eppstein, M.J.** "Feature Selection and Classification in Noisy Epistatic Problems using a Hybrid Evolutionary Approach", poster and published extended abstract accepted for *Genetic and Evolutionary Computation Conference (GECCO)*, 2007.
27. **Eppstein, M.J.**, Payne, J.L., White, B.C., and Moore. J.H., "Hill-climbing through 'random chemistry' for detecting epistasis", *Genetic and Evolutionary Computation Conference (GECCO), late-breaking papers, 2006*.
28. **Eppstein, M.J.**, Payne, J.L. and Goodnight, C.J. "Speciation by Self-Organizing Barriers to Gene Flow in Simulated Populations with Localized Mating", *Workshop Proceedings for Genetic and Evolutionary Computation Conference (GECCO)*, 2006.
29. J.L. Payne and **M.J. Eppstein**, "Emergent Mating Topologies in Spatially Structured Genetic Algorithms", *Proceedings of Genetic and Evolutionary Computation Conference (GECCO) 2006*, pp. 207-214. [\[pdf\]](#)
30. J.L. Payne and **M.J. Eppstein**, "A Hybrid Genetic Algorithm with Pattern Search for finding Heavy Atoms in Protein Crystals", *Genetic and Evolutionary Computation Conference (GECCO) 2005*, Part 1, Eds. H-G Bayer *et al.*, pp. 377-384, 2005. (nominated for a best-paper award). [\[pdf\]](#)
31. Godavarty, A., **Eppstein, M.J.**, Zhang, C., and Sevick-Muraca, E.M., "Fluorescence-enhanced optical tomography on large phantoms using dual point illumination geometry", *OSA Biomedical Topical Meetings*, OSA Technical Digest, Optical Society of America, Washington, DC, April, 2004.
32. Godavarty, A., **Eppstein, M.J.**, and Sevick-Muraca, E.M., "Fluorescence-enhanced optical tomography: Absorption and lifetime contrast studies", *OSA Biomedical Topical Meetings*, OSA Technical Digest, Optical Society of America, Washington, DC, April, 2004.
33. Fedele, F., Laible, J.P., and **Eppstein, M.J.**, "Boundary Element Solution of the Coupled Fluorescence Diffusion Equations", *OSA Biomedical Topical Meetings*, OSA Technical Digest, Optical Society of America, Washington, DC, April, 2004.
34. Gilbert, J., and **Eppstein, M.J.**, "Codons in Evolutionary Computation", *Genetic and Evolutionary Computation Conference (GECCO) 2003*, Part 1, Eds. E. Cantu-Paz *et al.*, *Lecture Notes in Computer Science*, **2723**:967-978, 2003. [\[pdf\]](#)
35. **Eppstein, M.J.**, Zhang, C., Godavarty, A., and Sevick-Muraca, E.M., "Advances in 3-D frequency domain fluorescence tomography", *Proc SPIE* **4955**:211-218, 2003.
36. Zhang, C., **Eppstein, M.J.**, Godavarty, A., and Sevick-Muraca, E.M., "A hybrid approach to Bayesian image reconstruction", *SPIE 2003 ProcSPIE* **4955**:591-599, 2003.

37. **Eppstein, M.J.**, and Laible, J.P., "The benefits of vectorization in optical tomography", *Proc SPIE* **4955**:59-69, 2003.
38. Godavarty, A., Sevick-Muraca, E.M., **Eppstein, M.J.**, Zhang, C., "Fluorescence-enhanced tomographic imaging in large phantoms using gain-modulated ICCD camera", *SPIE* **4949**:433-443, 2003.
39. **Eppstein, M.J.**, Hawrysz, D.J., Godavarty, A., and Sevick-Muraca, E.M., "Experimental Frequency Domain Fluorescence Tomography", *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington, DC*, pp. 510-512, April, 2002.
40. Godavarty, A., Sevick-Muraca, E.M., and **Eppstein, M.J.**, "Minimizing mismatch of forward model and experimental measurements for fluorescence-enhanced optical imaging", *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington, DC*, pp. 516-518, April, 2002.
41. Joshi, A., Sevick-Muraca, E.M., and **Eppstein, M.J.**, "A Method to Determine the Optimal Number of Measurements for Three-Dimensional Optical Tomography for a Physiologically Realistic Geometry", *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington, DC*, pp. 128-130, April, 2002.
42. Fedele, F., Laible, J.P., and **Eppstein, M.J.**, "Generalized Adjoint Sensitivities of the Coupled Frequency Domain Fluorescence Diffusion Equations", *OSA Biomedical Topical Meetings, OSA Technical Digest, Optical Society of America, Washington, DC*, pp. 371-373, April, 2002.
43. Hawrysz, D.J., **Eppstein, M.J.**, and E.M. Sevick-Muraca, "Measurement and Model Error Assessment of a Single Pixel, Frequency Domain Photon Migration Apparatus and Diffusion Model for Imaging Applications." European Biomedical Optics and Spectroscopy Conference, Amsterdam, 2000.
44. **Eppstein, M.J.** and Rizzo, D.M., "Rapid 3-D Bayesian site characterization: A tandem strategy", *Proceedings of the XIII International Conference on Computational Methods in Water Resources*, L.R. Bentley, J.F. Sykes, C.A. Brebbia, W.G. Gray, and G.F. Pinder, eds., Vol 1: Computational Methods for Subsurface Flow and Transport, Balkema, Rotterdam, The Netherlands, pp. 491-494, 2000.
45. **Eppstein, M.J.**, "Three-dimensional fluorescence absorption imaging with domain decomposition", in *Biomedical Topical Meetings, OSA Technical Digest*, Optical Society of America, Washington, DC, pp. 173-176, 2000.
46. **Eppstein, M.J.**, Dougherty, D.E., Hawrysz, D.J., and Sevick-Muraca, E.M., "Three-dimensional optical tomography", *Optical Tomography and Spectroscopy of Tissue III*, Chance, B., Alfano, R.R., and Tromberg, B.J., eds., *SPIE Proceedings*, **3597**:97-105, 1999.
47. **Eppstein, M.J.**, Dougherty, D.E., Troy, T.L., and Sevick-Muraca, E.M., "Stochastic optical tomography using beta-distributed parameters to model absorption, lifetime, and quantum

- efficiency", *Biomedical Imaging: Reporters, Dyes, and Instrumentation*, Bornhop, D.J., Contag, C.H., and E.M. Sevick-Muraca, *SPIE Proceedings*, **3600**:230-236, 1999.
48. **Eppstein, M.J.** and Dougherty, D.E., "3-D computed subsurface tomography", *Proceedings of the XII International Conference on Computational Methods in Water Resources*, Vol. **2**, pp. 329-336, 1998.
  49. **Eppstein, M.J.** and Dougherty, D.E., "Optimal 3-D geophysical tomography", *Proceedings of the Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP)*, pp. 249-256, 1998.
  50. **Eppstein, M.J.** and Laible, J.P., "A practical parallel retrofit of a 3-Dimensional surface water model", *Proceedings of the 2<sup>nd</sup> International Conference on Computer Modeling of Seas and Coastal Regions: COASTAL 95*, Cancun, Mexico, September, 1995.
  51. **Eppstein, M.J.** and Dougherty, D.E., "Parameter estimation with data-driven zonation", *Proc. of the 10<sup>th</sup> International Conference on Computational Methods in Water Resources*, Vol. 1, pp. 727-734, Heidelberg, Germany, June, 1994.
  52. **Eppstein, M.J.**, Guarnaccia, J.F., and Dougherty, D.E., "Parallel groundwater computations using PVM", *Proc. of the 9<sup>th</sup> International Conference on Computational Methods in Water Resources*, Vol. 1, pp. 713-720, Denver, CO, 1992.

#### **Other Conference Presentations, Papers, and Published Abstracts**

1. Watts, R., **Eppstein, M.J.**, Thomas, A., Nickerson, J.P., Garavan, H., Andrews, T., Filippi, C.G., and Freeman, K. "Prediction of recovery from mild TBI using genetic programming analysis of DTI data", Poster presentation at the International Society for Magnetic Resonance in Medicine (ISMRM), Toronto, Canada, 5/30-6/5, 2015.
2. **Eppstein, M.J.**, Rizzo, D.M., Lee, B.Y.H., Krupa, J., and Manukyan, N., "National Survey Respondents as Agents in a Model of Plug-In Hybrid Electric Vehicle Adoption", Transportation Research Board (TRB), 13-0728, presented January, 2014.
3. N. Manukyan, **M.J. Eppstein**, and D.M. Rizzo, "Improved Cluster Identification and Visualization in High-Dimensional Data using Self-Organizing Maps", published abstract and presentation, American Geophysical Union Fall Meeting, 2011.
4. **Eppstein, M.J.**, Grover, D.K., Marshall, J.S., and Rizzo, D.M. "An agent-based model to study market penetration of plug-in hybrid electric vehicles", 2<sup>nd</sup> Annual Complexity in Business Conference, University of Maryland, Washington, D.C., Nov 12, 2010.
5. **Eppstein, M.J.**, Luck, M., Bongard, J. "Using GP to co-estimate model structure and parameters of ODEs from sparse, noisy data sets. Presented orally at Genetic Programming Theory and Practice (GPTP), Ann Arbor, MI, May 2009.
6. Langevin, H.M., **Eppstein, M.J.**, Payne, J.L., Gale, D., Ikoma, S., Meissinger, Q., Moats, C., Sayre, J., Scott, J., Varga, S., Davis, R., and Reardon, M., "Network analysis of cross-class

referral patterns between conventional and CAM practitioners in Chittenden County, Vermont”, poster presentation at the North American Research Conference on Complementary and Integrative Medicine, Minneapolis, MN 2009.

7. **Eppstein, M.J.** and Molofsky, J. "Predicting naturalization vs. invasion in plant communities using stochastic cellular automata models", *NKS 2007 Wolfram Science Conference*, Burlington, VT, July 14, 2007.
8. **Eppstein, M.J.** and Molofsky, J. Predicting invasion vs. naturalization in plant communities. Poster presentation at the *2007 Annual meeting of the Weed Science Society of America (WSSA)*, San Antonio, TX, Feb 2007.
9. Molofsky, J. and **M. J. Eppstein**. Naturalization versus invasion in plant communities. *91<sup>st</sup> Ecological Society of America annual meeting*. Memphis, TN August 2006
10. **Eppstein, M.J.**, Payne, J.L., White, B.C., and Moore, J.H. "A "Random Chemistry" Algorithm for Detecting Epistatic Genetic Interactions", International Conference on Complex Systems (ICCS), Boston, MA, June, 2006.
11. **Eppstein, M.J.**, Payne, J.L., and Goodnight, C.J. "Speciation by Self-Organizing Barriers to Gene Flow in Simulated Populations with Localized Mating", poster presentation at *Evolution 2006*; Joint National Meetings of the Society for the Study of Evolution (SSE), the Society of Systematic Biologists (SSB), and the American Society of Naturalists (ASN) June 23-27, 2006.
12. **Eppstein, M.J.** and J. Molofsky. Modeling non-competitive and competitive ecological interactions: Implications for coexistence, invasion, and the importance of spatial scale of interactions, abstract published and talk presented at *90th Ecological Society of America annual meeting*, Montreal, August, 2005.
13. **Eppstein, M.J.** and Hoffmann, J.P. Crystallographic Case Study in an Interdisciplinary Evolutionary Computation Course, presented in the Evolutionary Computation in Practice Track, *Proc. GECCO*, (2005).
14. **Eppstein, M.J.**, Payne, J.L., F. Fedele, Laible, J.P., Godavarty, A., and E.M. Sevick-Muraca, "Validation of the Boundary Element Method for Fluorescence Photon Migration", Fourth Inter-Institute Workshop on Optical Diagnostic Imaging from Bench to Bedside, National Institutes of Health, Bethesda, MD, Sept., 2004.
15. Godavarty, A., **Eppstein, M.J.**, and E.M. Sevick-Muraca, "Three-dimensional fluorescence-enhanced absorption and lifetime tomography", Fourth Inter-Institute Workshop on Optical Diagnostic Imaging from Bench to Bedside, National Institutes of Health, Bethesda, MD, Sept., 2004.
16. Laible, J.P., Fedele, F. and **Eppstein, M.J.**, "A boundary element approach to optical and fluorescence tomography", *SPIE 4955-33*, 2003.



17. **Eppstein, M.J.**, Godavarty, A., Zhang, J., Laible, J., and Sevick-Muraca, E.M., "3-D Fluorescence Tomography for Breast Imaging", 17th Vermont Cancer Center Cancer Research Symposium: Cancer in a Post-Genomic Era, Burlington, VT, Oct, 2002.
18. May, S.T., **Eppstein, M.J.**, Tang, M.E., and Yandell, D.W., "The human retinoblastoma gene mutation spectrum: Analyses of 240 independent mutations." Presented at the 17th Vermont Cancer Center Cancer Research Symposium: Cancer in a Post-Genomic Era, Burlington, VT, Oct, 2002 and the American Society of Human Genetics, Baltimore, MD, October, 2002.
19. **Eppstein, M.J.**, Godavarty, A., Zhang, J., Laible, J., and Sevick-Muraca, E.M., "Three-dimensional Bayesian tomography using sparse fluorescence frequency domain photon migration measurements on clinically relevant phantom volumes", Third Inter-Institute Workshop on Diagnostic Optical Imaging and Spectroscopy: The Clinical Adventure, National Institutes of Health, Bethesda, MD, Sept., 2002.
20. Godavarty, A, Roy, R., Hawrysz, D., Sevick-Muraca, E.M., and **Eppstein, M.J.**, "Accuracy of 3D forward solvers and precision of frequency domain photon migration measurements for fluorescence enhanced optical imaging", United Engineering Foundation conference on Advances in Optics for Biotechnology, Medicine, and Surgery, Banff, Canada, July, 2001.
21. Hawrysz, D.J., **Eppstein, M.J.**, and E.M. Sevick-Muraca, "Deterministic errors in frequency domain, photon migration imaging", *SPIE*, **4250**, 2001.
22. Hawrysz, D.J., **Eppstein, M.J.**, Lee, J., Roy, R., and E.M. Sevick-Muraca, "Three-dimensional optical imaging using frequency domain photon migration", 10<sup>th</sup> Inverse Problems in Engineering Seminar, June 2000.
23. Hawrysz, D.J., **Eppstein, M.J.**, and E.M. Sevick-Muraca, "Bayesian approach to the inverse problem in biomedical imaging by photon migration", American Institute of Chemical Engineers Annual Meeting, October, 1999.
24. **Eppstein, M.J.**, Dougherty, D.E., Hawrysz, D.J., and Sevick-Muraca, E.M., "Rapid Bayesian 3-d Biomedical Optical Imaging", Inter-Institute Workshop in *In Vivo* Optical Imaging at the NIH, National Institutes of Health, Bethesda, MD, September, 1999.
25. Hawrysz, D.J., **Eppstein, M.J.**, and E.M. Sevick-Muraca, "Optical Imaging with a Bayesian Inversion Technique using Frequency Domain Photon Migration Measurements", Advances in Optics for Biotechnology, Medicine, and Surgery: United Engineering Foundation Conferences, August, 1999.
26. **Eppstein, M.J.**, Dougherty, D.E., Hawrysz, D.J., and Sevick-Muraca, E.M., "Three-dimensional optical tomography using APPRIZE", Conference on Lasers and Electro-Optics, Germany, June, 1999.

27. **Eppstein, M.J.**, Dougherty, D.E., and Sevick-Muraca, E.M., "Spectroscopic and imaging reconstructions in near infrared optical tomography", VT EPSCoR Annual Conference on Science and Technology, UVM, October, 1998.
28. Rizzo, D.M., Yu, M., and **Eppstein, M.J.**, "Distributed parameter estimation using three inverse methods", VT EPSCoR Annual Conference on Science and Technology, UVM, October, 1998.
29. **Eppstein, M.J.** and Dougherty, D.E., "Efficient three-dimensional parameter estimation using cross-hole seismic and hydrologic data", American Geophysical Union Fall Meeting, December, 1996. (awarded an Outstanding Student Paper Award)
30. **Heinrich (née Eppstein), M.J.E.** and Heinrich, B., "Pit-trapping as an optimal foraging strategy by ant lions", *Amer. Zool.*, **21**(4):995, 1981.

## Patents

1. **Eppstein, M.J.** and Dougherty, D.E., "*Three-dimensional stochastic tomography with upscaling*", U.S. Patent #6,067,340, 2000.

## Invited Keynotes and Seminars

1. "Predicting the Speed of Evolution, and Implications for Managing the Evolution of Antimicrobial Resistance", invited speaker for 2018 BEACON Annual Congress (special session for Erik Goodman's 75<sup>th</sup> Birthday Celebration), MSU, E. Lansing, MI.
2. "Which Way is Up?", Invited keynote speaker for the ME-NH-VT Regional National Consortium of Women in Technology (NCWiT) Aspirations in Computing Award Luncheon, UNH Manchester, May 14, 2016.
3. "Greed, Speed, and Deception in the Evolution of Drug Resistance in Malaria", invited speaker, Center for Collective Dynamics of Complex Systems (CoCo) Seminar Series Special CoCo/EvoS Joint Seminar, SUNY Binghamton, Binghamton, NY, April 4, 2016.
4. "Deception and Diversity Dynamics in the Evolution of Drug Resistance in Malaria", invited speaker, Middlebury College Department of Computer Science, Middlebury, VT, Oct 30, 2015.
5. "Which Way is Up?", Invited keynote speaker for the Faculty Luncheon at Grace Hopper Celebration of Women in Computing Conference, Houston, TX, Oct 16, 2015.
6. "Development of An Agent-Based Model to Study Market Penetration of Plug-In Hybrid Electric Vehicles (PHEVS): Lessons Learned", Invited Expert Speaker, Committee on the assessment of models used to predict the effects of policies related to tobacco products, Institute of Medicine of the National Academies, February 26, 2014.
7. "How to Search for Trouble ... and Find it!" (with Paul Hines), Santa Fe Institute Workshop on Power Grids as Complex Networks: Formulating Problems for Useful Science and Science Based Engineering, May 17, 2012.
8. "Random Chemistry", University of Michigan Santa Fe Institute Complexity Meeting: Transscientific Models, Ann Arbor, MI, October 14, 2011.
9. "How can Complex Systems approaches and new Smart Grid Technology make a more reliable and efficient Power System?", Powering the Future: The Vermont Smart Grid and Beyond, UVM/Sandia/DOE sponsored conference, Sheraton Hotel, Burlington, VT, May, 2011.
10. "Agent interaction topologies and the dynamics of information flow in complex adaptive systems", Cognitive Science and Applications Group, Sandia National Laboratories, Albuquerque, NM, April 1, 2011.
11. "Complex Systems in Clinical and Translational Science: principles and example applications", Clinical and Translational Science seminar series, University of Vermont, March 18, 2011.

12. "The Influence of Interaction Topologies in Complex Adaptive Systems", Keynote speech, AAAI Complex Adaptive Systems Symposium, Nov 10, 2010.
13. "Genome wide association analysis for detecting nonlinear interactions that pre-dispose for disease", Environmental pathology and carcinogenesis seminar series, University of Vermont, March 22, 2010.
14. "*Topology: The Final Frontier!*", Keynote speech, Genetic Programming Theory and Practice (GPTP), Ann Arbor, MI, May 2009.
15. "*Genomic mining for complex disease traits with 'Random Chemistry'*", Computational Genetics Laboratory, Dartmouth College, Hanover, NH, Dec 1, 2006.
16. "*A 'Random Chemistry' algorithm for detecting epistatic genetic interactions*", Department of Computer Science, Middlebury College, Middlebury, VT, April 7, 2006.
17. "*Molecularly-targeted imaging with diffuse fluorescence tomography for biomedical diagnostics*", Vermont Lung Center, University of Vermont College of Medicine, Burlington, VT, Sept. 30, 2003.
18. "*The benefits of vectorization in Matlab: obtaining speedups without parallelism*", Department of Computer Science, Rochester Institute of Technology, Rochester, NY, May 6, 2003.
19. "*Algorithm Development for Biomedical Fluorescence Tomography*", Department of Imaging Science, Rochester Institute of Technology, Rochester, NY, May 5, 2003.
20. "*Fluorescence Tomography for Biomedical Diagnostics: Mathematical and Computational Challenges*", Departments of Mathematics, Rensselaer Polytechnic Institute, Troy, NY, March, 31, 2003.
21. "*3-D Bayesian fluorescence tomography from sparse and noisy frequency domain photon migration data sets*", Harvard Medical School, Photon Migration Seminar Series, Massachusetts General Hospital Imaging Center, Boston, MA, September, 2001.
22. "*Recursive, Minimum-Variance Optical Imaging with Domain Decomposition*", Optical Society of America spring meeting "Advances in Optical Imaging and Photon Migration 2000", Miami, Florida, April, 2000.
23. "*Rapid Bayesian 3-D Biomedical Optical Imaging*", Biomedical Computation Group, Thayer School of Engineering, Dartmouth College, Hanover, NH, November, 1999.
24. "*3-D Site Characterization Using APPRIZE*", Center for Geophysical Investigations of the Shallow Subsurface, Distinguished Lecture Series, Boise State University, May, 1999.
25. "*Using PVM to Implement Grand-Challenge Problems in Environmental Engineering: a Case Study of a Finite-Element Groundwater Model*", Workshop in Parallel Processing for Undergraduate Educators, Colgate University, Hamilton, NY, January, 1993.

## **Funding:**

## Research Grants:

### Completed:

1. **P.I.** for "*Recursive Bayesian Optical Tomography for Imaging Tissues*", DBI/CBA 987-0779, National Science Foundation, Division of Biological Infrastructure/Computational Biology Activities, \$290,043, 09/15/98-8/31/01. Supplemented with an additional \$27,000, 10/1/00-4/31/01.
2. **P.I.** for "*3-D Frequency-Domain NIR Diagnostic Breast Imaging with APPRIZE*", R01 EB 002763 (formerly R01 CA 88082), National Institutes of Health, National Institute for Biomedical Imaging and Bioengineering and National Cancer Institute, Bioengineering Research Grants, \$805,662, 4/3/01-3/31/04 (no-cost extension to 3/31/05).
3. **P.I.** (with J. Molofsky) for "Disentangling the mechanisms of species diversity in landscapes", DOE EPSCoR Computational Biology pilot project (funded out of DE-FG02-00ER45828, P.I.: S. Wallace), \$35,000 direct, 7/1/02-6/31/04 (no-cost extension to 6/30/07).
4. **P.I.** (originally, with M. Rould, who later left the project) for "A Bayesian Genetic Algorithm Approach to Crystallographic Phasing"; later generalized to "Evolutionary Computational Approaches to Complex Biological Problems", DOE EPSCoR Computational Biology pilot project (funded out of DE-FG02-00ER45828, P.I.: S. Wallace), \$40,000 direct, 9/1/03-8/31/05 (no-cost extension to 6/30/07).
5. **P.I.** for "Dynamics on Complex Networks", NSF EPSCoR pilot research support (funded out of NSF EPS 0701410, P.I.: J. VanHouten), \$15,000, 7/1/08-6/30/09.
6. **P.I.** (with co-P.I. W. B. Bowden) for "Advanced Computational Methods for Designing Stormwater Management Practices", U.S.G.S, \$31,000 direct, 3/1/2010-2/28/2011.
7. **P.I.** (with co-P.I.s J. Marshall and D. Rizzo and subcontract P.I. M. Dworkin) for "Regulatory Control Prediction for Transportation Alternative Energy Usage via a Multiscale Agent-Based Model", United States Department of Transportation through the University of Vermont Transportation Research Center \$500,000, 7/1/2008-5/30/2010 (no-cost extension to 6/30/2013).
8. **P.I.** (with J. D. Horbar) for "Analysis of a collaborative worldwide network of neonatal ICUs", National Institutes of Health, Eunice Kennedy Shriver National Institute for Child Health & Human Development, \$419,000, 4/14/2011-3/31/2013 (no-cost extension to 3/31/2015).

### Current:

1. **Co-P.I.** for "CRISP Type 2/Collaborative Research: Understanding the Benefits and Mitigating the Risks of Interdependence in Critical Infrastructure Systems", National Science Foundation Award 1735513, P.I. Paul Hines. \$979,525, 1/1/18-12/31/21. (Collaborative research with Award 1735463, P.I. Eytan Modiano, Co-PIs Konstantin Turitsyn and Amy Glasmeier, MIT, \$1,199,898 and Award 1735354, P.I. Ian Dobson, Iowa State University).
2. **Co-I** for "Northern New England Palliative Care Teleconsult Research Laboratory", Northern New England Clinical and Translational Research Network, (PIs Paul Han and Robert Gramling), \$45,852, 2/14/18-2/14/19.

## Research Infrastructure and Training Grants:

### Completed:

1. **Core Faculty**, “Complex Systems Thinking and Modeling for Ecosystem Analysis” (P.I. J. VanHouten). National Science Foundation EPSCoR Research Infrastructure Improvement (RII) Grant, \$6,692,531 from 8/15/07-6/30/10. I was one of the core faculty and made significant contributions to writing the science portions of this grant related to complex systems analysis and modeling.
2. **P.I.** from 7/1/2010-3/1/2011 for “UVM Complex Systems Center for Informed Decision-Making and Design”, NASA Grant# NNX09AR18G, \$500,000, 9/1/09-8/31/12.
3. **Co-P.I.** (with PI: J. Marshall, and co-PIs: S. Higgins, P. Hines, C. Koliba) for “IGERT: Smart Grids – Technology, Human Behavior and Policy”, National Science Foundation Integrative Graduate Education, Research, and Training Grant, **NSF/DGE-1144388**, \$2,896,126 from 8/1/12-7/31/17 (NCE through 7/31/2019).
4. **PI** for “STEM-Connect: Scholarships for the Computer Science STEM disciplines”, National Science Foundation S-STEM award, DUE-1356426, \$649,150, 6/15/14-5/31/19.
5. **PI** for subaward from BRAID “Building, Recruiting, and Inclusion for Diversity”, \$120,000 direct, 10/1/2014-6/30/2018. UVM Computer Science is one of 15 universities nationwide selected to participate in this project is led by Maria Klawe, President of Harvey Mudd College and Telle Whitney, CEO of the Anita Borg Institute, with funding by Facebook, Google, Intel, Microsoft, CRA and NSF. (Note: this award continues, but I am no longer the PI).

### Current:

1. Senior Faculty Mentor and Member of Brains Trust for “Translational Research to Prevent and Control Global Infectious Diseases. (Translational Global Infectious Diseases Research Center - TGIR);, NIH COBRE (PI: Beth Kirkpatrick, co-PI: Christ Huston), \$10,676,670 (\$7,477,904 direct, \$3,198,775 indirect) 9/15/18-7/31/23.

## Equipment Grants

### Completed:

1. **Co-P.I.** (with G.Pinder, T.Keller, F. Sansoz, D. Rizzo) for "Enabling Technology for High Speed Computing", UVM Faculty Equipment Acquisition funded by NSF EPSCoR, \$20,000 direct, awarded 3/31/04.

## Grants Specifically To Fund Graduate Students:

### Completed:

1. **P.I.** (with co-P.I. W. Breck Bowden) for “A Multiscale, Multiobjective Evolutionary Approach for Analyzing Complex Flow and Transport in the Lake Champlain Watershed”, NSF EPSCoR graduate research assistantship to fund Ph.D. student Karim Chichakly (funded out of NSF EPS

- 0701410, P.I.: J. VanHouten), \$15,000, 1/1/08-6/30/08, \$30,000, 7/1/08-6/30/09, \$30,000, 7/1/09-6/30/10.
2. **P.I.** for "Interaction Topologies and the Flow of Information in Complex Adaptive Systems", NSF EPSCoR graduate research assistantship to fund Ph.D. student Joshua Payne (funded out of NSF EPS 0701410, P.I.: J. VanHouten), \$30,000, 7/1/08-6/30/09.
  3. **P.I.** for "Computational Modeling in Ecology and Evolution", DOE EPSCoR Computational Biology graduate research assistantship to fund Ph.D. student Joshua Payne, (funded out of DE-FG02-00ER45828, P.I.: S. Wallace), \$20,000, 7/1/05-6/30/06. Renewed for \$20,722, 7/1/06-6/30/07.
  4. **P.I.** for "Biomedical Fluorescence Tomography using the Boundary Element Method", Vermont Genetics Network graduate research assistantship to fund Ph.D. student Francesco Fedele, (funded out of NIH grant NCRR, 1 P20 RR16462, P.I.: C. Allen), \$22,000, 6/1/03-5/31/04.
  5. **P.I.** for "Application of Proper Orthogonal Decomposition to Biomedical Fluorescence Tomography", DOE EPSCoR Computational Biology summer graduate research assistantship to fund M.S. student Scott Wakefield, (funded out of DE-FG02-00ER45828, P.I.: S. Wallace), \$4170, 6/15/03-8/15/03.

### **Grants to Support Teaching:**

#### Completed:

1. **P.I.** (with J. Hoffmann) for "Developing Cross-Disciplinary Learning Experiences in Evolutionary Computation", University of Vermont Center for Teaching and Learning, \$3,165 direct, 7/1/04-6/31/05.
2. **P.I.** for "A novel computational science course for life science majors", University of Vermont Center for Teaching and Learning, \$5000 direct, 7/1/07-6/30/08.

### **Planning Grants:**

#### Completed:

1. **P.I.** (with D. Rizzo, L. Stevens, C. Goodnight, J. Molofsky, and J. Hoffmann) for "Proposed VACC focal research area in Biocomplexity", Vermont Advanced Computing Center; \$5,000 direct, 9/1/05-5/31/06 (no cost extension through 5/31/07).

### **Contracts:**

#### Completed:

1. **P.I.** for contract "*Tools for Inversion and Imaging*", from Subterranean Research, Inc., as subaward of a U.S. Department of Energy SBIR Phase II (P.I. D.M. Rizzo); contract amount \$51,839, 01/01/99-08/31/99; renewal amount \$30,000, 01/01/00-05/31/00.
2. **P.I.** for contract "*Professional Development Course on Inversion and APPRIZE*", Subterranean Research, Inc., contract amount \$15,000, 01/01/00-06/30/00.

### **Teaching and Advising**

## Courses Taught

I have independently developed and taught the following courses at UVM.

#	Sem	Course	Name	Purpose: R=required E=elective U=Ugrad G=Grad M=CS major N=nonmajor	Cr. Hrs. (lec+ lab)	Sections taught	Size	Rating (1=worst, 5 = best)
1	F'83	CS 3	Computer Literacy	R,U,N	3  (2+2)	1 lec/7 labs	211	3.42
2	F'83	CS 103	Programming Languages	R,J,M	3	1 lec	58	4.36
3	S'84	CS 3	Computer Literacy	R,U,N	3  (2+2)	1 lec/8 labs	234	3.91
4	S'84	CS 103	Programming Languages	R,J,M	3	1 lec	8	4.50
5	F'84	CS 3	Computer Literacy	R,U,N	3  (2+2)	1 lec/7 labs	211	3.59
6	F'84	CS 103	Programming Languages	R,J,M	3	1 lec	81	3.74
7	F'84	CS 104	Data Structures	R,J,M	3	1 lec	11	
8	S'85	CS 12	Prog II	R,F,M	3	1 lec	100	3.45
9	S'85	CS 12	Prog II	R,F,M	3	1 lec	70	3.45
10	S'85	CS 104	Data Structures	R,J,M	3	1 lec	59	3.41
11	F'85	CS 12	Prog II	R,F,M	3	1 lec	59	
12	F'85	CS 104	Data Structures	R,J,M	3	1 lec	18	
13	S'86	CS 12	Prog II	R,F,M	3	1 lec	75	3.92
14	S'86	CS 104	Data Structures	R,J,M	3	1 lec	60	3.89
15	F'86	CS 12	Prog II	R,F,M	3	1 lec	36	4.42
16	F'86	CS104	Data Structures	R,J,M	3	1 lec	11	4.12



17	S'87	CS 12	Prog II	R,F,M	3	1 lec	51	4.45
18	S'87	CS104	Data Structures	R,J,M	3	1 lec	28	4.13
19	Su'87	CS 12	Prog II (CE)	R,F,M	3	1 lec	8	4.87
20	F'87	CS 3	Computer Literacy	R/E,U,N	3 (2+2)	1 lec/4 labs	116	4.12
21	S'88	CS 3	Computer Literacy	R/E,U,N	3 (2+2)	1 lec/2 labs	57	4.38
22	F'88	CS 12	Prog II	R,F,M	3	1 lec	37	4.57
23	F'88	CS 95	Microcomp. Applications	R,F,M	3 (2+2)	1 lec/4 labs	114	3.78
24	S'89	CS 2	Microcomp. Applications	R/E,U,N	3 (2+2)	1 lec/3 labs	72	3.58
25	S'89	CS 12	Prog II	R,F,M	3	1 lec	51	3.97
26	S'89	CS 12	Prog II (CE)	R,F,M	3	1 lec	22	
27	F'89	CS 12	Prog II	R,F,M	3	1 lec	36	4.33
28	F'89	CS 12	Prog II (CE)	R,F,M	3	1 lec	19	
29	S'90	CS 12	Prog II	R,F,M	3	1 lec	64	4.07
30	S'90	CS 104	Data Structures	R,J,M	3	1 lec	12	4.1
31	F'90	CS 12	Prog II	R,F,M	3	1 lec	42	4.29
32	F'90	CS 103	Programming Languages	R,J,M	3	1 lec	36	3.91
33	S'91	CS 12	Prog II	R,F,M	3	1 lec	47	4.23
34	S'91	CS 104	Data Structures	R,J,M	3	1 lec	31	3.62
35	F'91	CS 11	Prog I	R,F,M/N	3 (2+2)	1 lec/2 labs	65	3.85
36	F'91	CS 11	Prog I	R,F,M/N	3 (2+2)	1 lec/2 labs	65	3.92
37	F'91	CS 11	Prog I	R,F,M/N	3 (2+2)	1 lec/2 lab	65	3.77
38	F'91	CS 11	Prog I (CE)	R,F,M/N	3 (2+2)	1 lec/1 lab	25	
39	S'92	CS 11	Prog I	R,F,M/N	3 (2+2)	1 lec/3 lab	77	3.5

40	S'92	CS 11	Prog I	R,F,M/N	3 (2+2)	1 lec/3 labs	78	3.49
41	S'92	CS 11	Prog I (CE)	R,F,M/N	3 (2+2)	1 lec/1 labs	29	
42	S'92	CS 103	Programming Languages	R,J,M	3	1 lec	13	4.42
43	F'92	CS 11	Prog I	R,F,M/N	3 (2+2)	1 lec/3 labs	74	3.87
44	F'92	CS 104	Data Structures	R,J,M	3	1 lec	12	4.60
45	F'94	CS 16	Prog for Engrs	R,F,N	3	1 lec/1lab	26	4.25
46	F'94	CS 16	Prog for Engrs	R,F,N	3	1 lec/2 labs	38	4.18
47	F'94	CS 16	Prog for Engrs	R,F,N	3	1 lec/1 lab	33	4.00
48	S'95	CS 16	Prog for Engrs	R,F,N	3	1 lec/1 lab	35	4.33
49	F'95	CS 16	Prog for Engrs	R,F,N	4 (3+2)	1 lec/3 labs	87	4.2
50	S'96	CS 16	Prog for Engrs	R,F,N	4 (3+2)	1 lec/3 labs	84	4.36
51	S'96	CS 105	Software Engr	R,J,N	3	1 lec	12	4.30
52	F'96	CS 16	Prog for Engrs	R,F,N	4 (3+2)	1 lec/3 labs	60	4.04
53	F'96	CS 27	C++ Prog	R,F,M	1	1 lec	40	3.73
54	S'97	CS 16	Prog for Engrs	R,F,N	4 (3+2)	1 lec/2 labs	55	4.18
55	S'97	CS 27	C++ Prog	R,F,M	1	1 lec	25	4.33
56	F'97	CS 21	Comp Prog I	R,F,M	4 (3+2)	1 lec/3 labs	52	4.52
57	F'97	CS 100	Object-Oriented Prog	R,S,M	3	1 lec	18	4.00
58	F'00	CS 100	Object-Oriented Prog	R,S,M	3	1 lec	24	4.00
59	F'00	CS 100	Object-Oriented Prog	R,S,M	3	1 lec	20	4.08
60	S'01	CS 100	Object-Oriented Prog	R,S,M	3	1 lec	29	4.47
61	S'02	CS 294	Ind. Study: Bioinformatics, Mutation Spectra	E,G,M	3	1 lec	1	
62	S'03	CS 260	Parallel Alg & Prog Tech	E,S/G,M/N	3	1 lec	16	4.44

63	S'04	CS 16	Prog for Engrs	R,F,N	4 (3+2)	1 lec/2 labs	40	3.83
64	S'04	CS 381	Grad Seminar in Evol Comp	R,G,M	1	1 lec	11	4.80
65	F'04	CS 295	Evolutionary Computation	E,G,M/N	3	1 lec, team- taught	15	4.50
66	S'05	CS 104	Data Structures	R,J,M	3	1 lec	22	3.33
67	S'05	CS 260	Parallel Alg & Prog Tech	E,S/G,M/N	3	1 lec	9	4.29
68	F'05	CS 104	Data Structures	R,J,M	3	1 lec	11	4.43
69	S'06	CS 104	Data Structures	R,J,M	3	1 lec	26	4.44
70	S'06	CS 295	Intro to Scientific Computing	E,U/G,M/N	3	1 lec	15	4.57
71	F'06	CS 104	Data Structures	R,J,M	3	1 lec	10	4.75
72	F'06	CS/Bot 295/395	Evolutionary Computation	E,U/G,M/N	3	1 lec	15	4.60
73	F'07	CS 195	Data Anal, Mod, and Vis for Life Sci Maj	E/U/N	3	1 lec	4	4.00
74	S'08	CS 16	Prog for Engrs	R,F,N	4 (3+2)	1 lec/2 labs	53	3.70
75	S'08	CS 195	Matlab Prog & Prob Solv	E,G,N	3	1 lec	2	Included in above
76	S'08	CS 394	Ind Study: High-Dim Param Estimation	E,G,M	3	1 lec	1	Too small
77	F'08	CS/Biol 295	Evolutionary Computation	E,U/G,M/N	3	1 lec	14	4.89
78	S'09	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	15	4.91
79	S'10	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	10	4.80
80	S'11	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	11	4.88
81	F'11	CS/CSYS/Biol 352	Evolutionary Computation	E,U/G,M/N	3	1 lec	13	4.40

82	S'12	CS 16	Programming for Engrs	R,F,N	4 (3+2)	1 lec/2 labs	48	3.98
83	S'12	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	10	4.89
84	F'12	CS/CSYS/Biol 352	Evolutionary Computation	E,U/G,M/N	3	1 lec	19	4.60
85	S'13	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	17	4.27
86	F'13	CS/CSYS/Biol 352	Evolutionary Computation	E,U/G,M/N	3	1 lec	15	4.73
87	S'14	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	17	4.57
88	S'14	CS 95	Seminar for new CS majors	E/U/M	1	1 sem	30	4.15
89	F'14	CS/CSYS/Biol 352	Evolutionary Computation	E,U/G,M/N	3	1 lec	14	4.57
90	S'15	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	16	4.33
91	S'15	CS 50	Seminar for new CS majors	E/U/M	1	1 sem	75	4.33
92	F'15	CS 50	Seminar for new CS majors	E/U/M	1	1 sem	84	4.24
93	F'15	CS/CSYS 302	Modeling Complex Sys	E/R, G, M/N	3	1 lec	11	4.33
			Sorry, I got tired of keeping this table current. I have continued to teach CS/CSYS 302, CS/CSYS 352, and CS 50.					

## Graduate Student Thesis/Dissertation Supervision

### Ongoing:

1. Primary advisor of Laurence Clarfeld, PhD student, Department of Computer Science, 2016-.

### Completed:

1. Primary advisor (with co-advisor Donna Rizzo) of Viktoria Manukyan, MS student, Complex Systems and Data Science, 2016-2018.
2. Advisor of Ph.D. student Narine Manukyan, "[Analysis and Modeling of Quality Improvement on Clinical Fitness Landscapes](#)", Department of Computer Science, 2011-2014. PhD granted 2014. Currently assistant professor of Computer Science at Champlain College, Burlington, VT.
3. Advisor of (part-time) Ph.D. student, Jeff Sprenger, Real-time Neuron Tracing, Department of Computer Science, 2007-2013 (left the program ABD to start Xemory, LLC, a company using evolutionary computation to teach principles of science and discovery).
4. Advisor of Ph.D. student Mark Wagy, Smart Grid related research, Department of Computer Science, 2012-2013 (switched advisors due to research interests).
5. Co-Advisor (with D.M. Rizzo) of M.S. student Jo Krupa, "Analysis of a Plug-In Hybrid Adoption Survey", School of Engineering, 2011-2013. MS granted 2013. Currently, City Engineer, City of New Haven, CT.
6. Advisor of Ph.D. student, Karim Chichakly, "[Multiobjective Design and Innovization of Robust Stormwater Management Plans](#)", Department of Computer Science, 2007-2013. Currently, co-owner and developer at isee Systems, Lebanon, NH and adjunct faculty at WPI.
7. Advisor of M.S. student Shreya Mukherjee, "Genetic Programming with nested Differential Evolution for Constant Estimation", Department of Computer Science, 2011-2012. MS granted 2012. Currently, software engineer at Data Innovations LLC, S. Burlington, VT.
8. Advisor of M.S. student Narine Manukyan, MS Thesis: "[Improved methods for cluster identification and visualization in high-dimensional data using self-organizing maps](#)", Department of Computer Science, 2009-2011. Completed her PhD with me in 2014 (see above).
9. Advisor of Ph.D. student, Joshua L. Payne, Dissertation: "[Interaction topologies and the flow of information in complex adaptive systems](#)", Department of Computer Science, UVM, 2004-2009. Ph.D. granted June, 2009. Post-doctoral associate with Jason Moore, Computational Genetics Laboratory, Dartmouth College, 2009-2011. Post-doctoral associate with Andreas Wagner (2012-2015) and junior group leader (2015-2017), Institute of Evolutionary Biology and Environmental Studies, University of Zurich. Swiss Institute of Bioinformatics Young Bioinformatician Award Winner, 2014. Dan David Prize Scholarship in Bioinformatics, 2015. Currently Assistant

Professor of Computational Biology, ETH Zurich since 2017 and Group Leader, Swiss Institute of Bioinformatics, Lausanne, Switzerland since 2018.

10. Advisor of Ph.D. student Michael Pellon, Department of Computer Science, 2008-2009. No degree granted.
11. Advisor of M.S. student, Paul Haake, MS project: "Detecting Large Supersets of SNPs that contain small epistatically interacting subsets", Department of Computer Science, UVM, 2006-2008. M.S. granted May 2008. Currently, Software Engineer at Amazon.com.
12. Advisor of M.S. student, Peter Duval, MS project: "Canonical Disjunctive Normal Form Genetic Programming for nonlinear-SNP Association Studies". Department of Computer Science, 2006-2008. M.S. granted Dec 2008.
13. Advisor of M.S. student, Joshua Gilbert, "Bayesian evolutionary algorithms for locating heavy atoms in protein crystals", Department of Computer Science, UVM, 2003-2005. No degree granted. Deceased.
14. Co-Advisor (with J. Laible) of Francesco Fedele, Dissertation: "Novel Numerical Techniques for Problems in Engineering Science", Department of Civil & Environmental Engineering, UVM, 2001-2004. Ph.D. granted 2004. Post-doctoral associate in the Global Modeling and Assimilation Office, NASA Goddard Space Flight Center, Greenbelt, Md, 2004-2006. Currently, assistant professor, Dept. of Civil & Environmental Engineering, Georgia Institute of Technology, Savannah.
15. Co-Advisor (with E.M. Sevick-Muraca) Anuradha Godavarty, Dissertation: "Fluorescence enhanced optical tomography in breast phantoms with measurements using a gain modulated intensified CCD imaging system", Department of Chemical Engineering, Texas A&M Univ, 2001-2003. Ph.D. granted 2003. Associate professor, Director of Optical Imaging Laboratories, Biomedical Engineering at Florida International University through 2013. Associate Professor, Biomedical Engineering, Indian Institute of Technology, Delhi, India, starting January 2014.
16. Funded and unofficially helped to co-Advise (with E.M. Sevick-Muraca) Daniel J. Hawrysz, Dissertation: "Bayesian approach to the inverse problem in contrast-enhanced, three-dimensional, biomedical optical imaging using frequency domain photon migration", Department of Chemical Engineering, Purdue Univ., 1998-2001. Ph.D. granted 2001. Currently, research scientist at Exxon Mobil.

### **Post-Doctoral Supervision (completed)**

1. Co-Supervise (with Josh Bongard and Mary Watzin) Dr. Matt Luck as a postdoctoral research assistant on the NSF EPSCoR Watershed Modeling Project (funded out of NSF EPS 0701410, P.I.: J. VanHouten), 2008-2009. Currently Research Scientist, ISciences, L.L.C., Burlington, VT.

2. Funded and Supervised Dr. Anuradha Godavarty as a postdoctoral research associate in computer science, UVM, 2003-2004. Currently, associate professor, Director of Optical Imaging Laboratories, Biomedical Engineering at Florida International University through 2013. Associate Professor, Biomedical Engineering, Indian Institute of Technology, Delhi, India, starting January 2014.
3. Funded and Supervised Dr. Chaoyang Zhang as a research assistant professor in computer science, UVM, 2001-2003. Currently, associate professor and Director of the School of Computing at University of Southern Mississippi.

### **Other Direct Graduate and Undergraduate Student Research Supervision (completed)**

1. On-site UVM supervisor for Brad Lanute, UVM RSENr MS student, while he was doing his summer internship at Sandia National Laboratories, Albuquerque, NM, summer 2011.
2. Supervised Computer Science PhD student Ahmed Abdeen Hamed for an independent study research project in Genomic Imprinting, Fall 2010.
3. Co-supervised undergraduate civil and environmental engineering student David Grover as a research assistant on our Transportation Research Center grant entitled "Regulatory Control Prediction for Transportation Alternative Energy Usage via a Multiscale Agent-Based Model", spring 2009-spring 2010.
4. Supervised M.S. student, Scott Wakefield, research in biomedical fluorescence tomography, funded through DOE EPSCoR summer research grant, Department of Computer Science, UVM, summer 2003.
5. Supervised undergraduate Joshua Gilbert (Computer Science Major, University of Vermont) through the SURE program (funded by the UVM Dept of Biochemistry and NIH) for research in evolutionary algorithms in structural biology, summer 2003.
6. Co-supervised (with J. Molofsky), undergraduate Chris Pyman (Mathematics major, Computer Science minor) for research in computational modeling of plant species interactions (funded by DOE EPSCoR pilot project), summer 2003.
7. Supervised M.S. student, Tyler Carr, research in phylogenetic tree algorithms, Department of Computer Science, UVM, spring 2003.
8. Supervised undergraduate Scott Wakefield (Computer Science Major, University of Vermont), funded through my discretionary funds, for exploratory research in DNA folding algorithms and their application to mutation spectra analysis, spring 2003.
9. Supervised undergraduate Joshua Gilbert (Computer Science Major, University of Vermont) through the HELIX program (funded by DOE EPSCoR summer internship) for research on use of codons for genetic representation in genetic algorithms, summer 2002.

10. Supervised M.S. student, Zheng Zheng Wei, independent study in mutation spectra analysis, Department of Computer Science, UVM, spring 2002.

### **Other graduate Student Committees:**

#### Ongoing:

1. Liz Scharnetzki, Member of PhD Studies Committee, Psychology, UVM, 2016-

#### Completed:

1. Ryan Grindle, Member of MS Defense Committee, Mathematics, UVM, 2016-2018.
2. Anton Bernatskiy, Member of PhD Studies Committee, Computer Science, UVM, 2014-2018
3. Roman Popov, Member of MS Studies Committee, Neuroscience, UVM, 2014-2018.
4. Afsoon Yousefi-Zowj, Member of PhD Studies Committee, Computer Science, UVM, 2015-2016.
5. Javier Garcia-Bernardo, Member of MS Thesis Committee, Computer Science, UVM, 2014-2016.
6. David W. Hinckley, Jr., Member of MS Thesis Committee, Mechanical Engineering, UVM, 2014-2015.
7. Pooya Rezai, Member of Ph.D. Dissertation Committee, Electrical Engineering, UVM, 2014-2015.
8. Richard T. Carrick, Member of Ph.D. Dissertation Committee, Bioengineering, UVM, 2014-2016.
9. Bryce Benson, Member of Ph.D. Dissertation Committee, Bioengineering, UVM, 2013-2016.
10. Joshua Pothén, Member of Ph.D. Studies Committee, Bioengineering, UVM COM, 2013-2016.
11. Joel Nipper, Member Ph.D. Studies Committee and Comprehensive Exam Committee, School of Natural Resources, 2008-2016.
12. Karol Zieba, Member, M.S. Thesis Defense Committee, UVM, 2015.
13. Narine Manukyan, Chair, Ph.D. Studies Committee, Department of Computer Science, UVM, 2011-2014.
14. Jeffrey Sprenger, Chair Ph.D. Studies Committee, Department of Computer Science, UVM, 2007-2013.
15. Matt Kaproth, Ph.D. Studies Committee, Department of Plant Biology, UVM, 2007-2013.
16. Shane Celis, Member Ph.D. Studies Committee, Department of Computer Science, UVM, 2011-2013.
17. Brad Lanute, Chair M.S. Defense Examination Committee, School of Natural Resources, UVM, 2013.



18. Mark Wagy, Chair, Ph.D. Studies Committee, Department of Computer Science, UVM, 2012-2013.
19. Jo Krupa, M.S. Thesis Defense Committee, School of Engineering, UVM, 2011-2013.
20. Karim Chichakly, Chair Ph.D. Studies Committee, Department of Computer Science, UVM, 2007-2013.
21. Jonathan Godbout, Chair, M.S. Thesis Defense Committee, Department of Mathematics and Statistics, UVM, 2013.
22. Joshua Auerbach, Member Ph.D. Studies Committee, Department of Computer Science, UVM, 2008-2013.
23. Paul Beliveau, Member Ph.D. Studies Committee, Department of Computer Science, UVM, 2011-2012 (left the program).
24. Somdeb Chatterjee, Member, M.S Thesis Examination Committee, Department of Computer Science, UVM, 2012.
25. Narine Manukyan, Chair M.S. Studies Committee, Department of Computer Science, UVM, 2009-2011.
26. Michael Pellon, Chair Ph.D. Studies Committee, Department of Computer Science, UVM, 2008-2009.
27. Kerry Allie, Ph.D. Studies Committee, Department of Plant Biology, UVM, 2007-2010.
28. Ryan Urbanowicz, Ph.D. Dissertation Committee, Genetics, Molecular, and Cellular Biology Graduate Program, Dartmouth Medical School, Hanover, NH, 2007-2012.
29. Casey Greene, Ph.D. Dissertation Committee, Genetics, Molecular, and Cellular Biology Graduate Program, Dartmouth Medical School, Hanover, NH, 2007-2009.
30. Casey Korecki, Member Ph.D. Dissertation committee, Mechanical Engineering, School of Engineering, UVM, 2007-2008.
31. Brittny Starford, Member Ph.D. Studies committee, Department of Biology, UVM, 2006-2010.
32. Zhiqiang, Li, Chair Ph.D. Dissertation Defense Committee, Civil & Environmental Engineering Program, UVM, Defended, Dec. 2006.
33. Robin Collins, Member Ph.D. Studies committee and Comprehensive Examination Committee, Department of Plant Biology, UVM, 2005-2009.
34. Thomas Weicht, Member Ph.D. Studies committee, Department of Biology, Univ. of Toledo, 2005- present.
35. Joshua Gilbert, Chair M.S. Project committee, Department of Computer Science, UVM, 2005-2007.
36. Joshua Payne, Member Ph. D. Studies committee, Comprehensive Examination Committee, Department of Computer Science, UVM, 2004-2009.
37. Nagi Basha, Member Ph. D. Studies committee, Comprehensive Examination Committee, Department of Computer Science, UVM, 2004-2005.

38. Tri Tran, Member Ph. D. Studies committee, Department of Computer Science, UVM, 2004-2010.
39. Thomas Tucker, Member, M.S. Comprehensive Examination Committee, Department of Biology, UVM, January, 2004.
40. Francesco Fedele: Member, Ph.D Dissertation Defense Committee, Dept. of Civil & Environmental Engineering, defended Dec 2004.
41. Charles Mark: Chair, MS Thesis Defense Committee, Department of Civil & Environmental Engineering, defended October, 2004.
42. Linda Mayer: Chair, MS Thesis Defense Committee, Department of Electrical & Computer Engineering, defended July 2004.
43. Norman Kennedy: Chair, Ph.D. Dissertation Defense Committee, Department of Cellular and Molecular Biology, UVM, November, 1999.
44. Mengchun Yu: Member, Ph.D. Dissertation Defense Committee, Department of Civil & Environmental Engineering, UVM, September, 1998.
45. Henry Tufo: Member, M.S. Thesis Defense Committee, Department of Computer Science, UVM, June 1995.

#### **Undergraduate Honor's Thesis Committees:**

1. Advisor for Honor's Thesis by Henry Anderson, "Within path competition in Evolutionary Trajectories Under Multiple Infections", Dept of Biochemistry, UVM, 2017.
2. Member, Honor's Thesis Committee, Nick Cheney, "The Effects of Morphological Shaping on the Evolution of a Simulated Robot with a Modular Controller", Dept of Computer Science, UVM, spring 2012.
3. Member, Honor's Thesis Committee, Evan Yandell, "Evolving Structural Modularity in Artificial Neural Networks", Dept of Computer Science, UVM, spring 2012.
4. Chair, Undergraduate Honor's Thesis Committee, Kyle John Palmer, Thesis on aggressive behavior in individual workers of 6 different species of harvester ant whose colony-level aggressive behaviors differ dramatically, Environmental Science, CAS, UVM, spring 2007.

## **Service**

### **National Service**

#### **Federal Agency Reviews**

- Panel Member, Information and Intelligent Systems (IIS), National Science Foundation, 2010.
- Panel Member, Information and Intelligent Systems (IIS), National Science Foundation, 2009.
- Panel Member, Advances in Biological Informatics (ABI), National Science Foundation, 2008.

- Panel Member, Biomedical Imaging Technology Study Section (BMIT), National Institutes of Health, 2005.
- Panel Member, Physical Imaging 2 Review Panel of the U.S. Army Breast Cancer Research Program, 2004.
- Panel Member, National Science Foundation Review Panel for Information Technology Bioinformatics, 2001.
- Panel Member, National Science Foundation Review Panel for Computational Biological Activities, 1999.
- Mail Reviewer for several *National Science Foundation Grant Proposals*, 1997-present.

### **Conference Service (Program Committees, Conference Peer Reviewing, and Session Chairing)**

- Program Committee Member for IEEE Alife, 2012, 2013, 2014
- Program Committee Member for PPSN, 2014.
- Program Committee Member for the Biological Applications Track, Genetic and Evolutionary Computation Conference, 2007-2012.
- Program Committee Member for 8<sup>th</sup> International Conference on Complex Systems, 2010-2011.
- Member, Standing Program Committee, OSA Biomedical Topical Meetings, Advances in Optical Imaging and Photon Migration, 2003-2008.
- Program Committee Member for the 6th European Conference on Evolutionary Computation, Machine Learning and Data Mining in Bioinformatics (EvoBIO), 2008.
- Program Committee Member for the 3rd International IEEE Workshop on Software Evolvability at the IEEE International Conference on Software Maintenance (ICMS), 2007.
- Reviewer for 2nd IAPR Workshop on Pattern Recognition in Bioinformatics (PRIB), 2007.
- Reviewer for IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology, 2005, 2006, 2008, 2009.
- Session chair, Optical Tomography and Spectroscopy of Tissue IV at Photonics West (International Society for Optical Engineering), San Jose, CA, January 2000.
- Session chair, XII International Conference on Computational Methods in Water Resources, Crete, Greece, 1998.

### **Editorial Boards**

- Editorial Board Member for BioData Mining, published by BioMed Central, 2007-2011.

## **External Peer Reviewer for Journals, Book Chapters**

- External peer reviewer for book chapter in *Stochastic Methods in Subsurface Contaminant Hydrology*, 1999.
- External peer reviewer for academic journal 1997-present. Journals reviewed for include:
  - *IEEE Transaction in Evolutionary Computation*
  - *IEEE Transactions in Neural Networks and Machine Learning*
  - *IEEE Transactions on Power Systems*
  - *Water Resources Research*
  - *Geophysics*
  - *Advances in Water Resources*
  - *Optics Letters*
  - *Optics Express*
  - *Optics Communications*
  - *Medical Physics*
  - *Journal of the Optical Society of America A*
  - *Journal of Biomedical Optics*
  - *Physics in Medicine and Biology*
  - *IEEE Transactions in Medical Imaging*
  - *Journal of Soft Computing*
  - *Ecological Modelling*
  - *Evolutionary Computation*
  - *American Journal of Human Genetics*
  - *Inverse Problems*
  - *Engineering in Biology and Medicine Magazine*
  - *Oikos*
  - *Energy Policy*

## **University Level Service**

- Computational Social Science Faculty Search Committee (2012-2013).
- Member, EPSCoR RACC Steering Committee (2013-present)
- Panel Member, Graduate College REACH grant program (2013)
- UVM Complex Systems Liaison for Sandia Smart Grid Collaboration (2011-2012).
- Founding Director, Complex Systems Center (became UVM wide 2009-2010).
- Chair, Complex Systems Transdisciplinary Research Initiative Working Group (2009-2010)
- Panel Member, NSF EPSCoR Complex Systems Graduate Research Assistantship Reviews (2009)
- Panel Member, NSF EPSCoR Complex Systems Pilot Project Reviews (2009)

- Program Coordinator, Certificate of Graduate Study in Complex Systems, (Dec. 2008-present).
- Member, Vermont Advanced Computing Center Director Search Committee (2007-08).
- Biosciences PhD Umbrella Steering Committee (2007-2008).
- Aiken Lecture '08-'09 Planning Committee (2007-08).
- University Diversity Curriculum Committee (2005).
- Member of the VT EPSCoR SBIR Phase 0 proposal review committee, (2005).
- Member of the DEPSCoR Pre-proposal review committee, (2003).

**College Level Service** (*CEMS is College of Engineering and Mathematical Sciences*)

- CEMS Associate Dean Search Committee (2014).
- CEMS Dean Search Committee (2012-2013).
- Energy Systems Engineering Faculty Search Committee (2012-2013).
- Chair, Complex Systems Curriculum Committee (Dec. 2008-present).
- CEMS Curriculum Committee member (1994-2009) and Chair (1994-1996, 2000-2009).
- Founding Director, Complex Systems Center (2006-2010).
- Dean's Faculty Advisory Committee, (2006-2009).
- Civil & Environmental Faculty Search Committee (2008-09). Bioengineering Faculty Search Committee (2007-08).
- Bioengineering & Computational Biology PhD Track Director (2007-2008).
- CEMS Bioengineering Advisory Committee (2005).
- Electrical and Computer Engineering Chair Search Committee (2003-04).
- CEMS Studies Committee (1986-1994).

**Department Level Service** (*CS is Department of Computer Science*)

- CS Graduate Coordinator (2017-present)
- CS Chair (2012-present)
- CS Open Houses/Visitation Days
- CS Curriculum Committee member (1983-present) and Chair (1997-2005, 2012-present).
- CS Faculty Search Committee (2005-06).
- UPE (CS Honor Society) Faculty Advisor (1983-2006).
- CS Computational Biology Faculty Search Committee (2001-02).
- CS certificate coordinator (1983-2001).
- CS Interim Chair Search Committee (1999)
- CS Co-op advisor (1983-1990).