

Education

University of Massachusetts Amherst (UMass), Amherst, MA

M.S. Computer Science, Summa Cum Laude, February 2009

Advisor: Hava T. Siegelmann GPA: 3.9/4.0

Ph.D. Computer Science, expected May 2011

Advisor: Hava T. Siegelmann

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

B.S., Computer Science, Minor in Mathematics, Summa Cum Laude, May 2005

Overall GPA: 3.86/4.0 Major GPA: 3.83/4.0 University Honors Program

Recent Experience

Research Assistant/DHS Fellow, BINDS lab at UMass, Amherst, MA. Fall 2005 – Present

- Research in complex systems, artificial life systems, biologically inspired systems, and multi-agent systems
 - HADES is a self-replicating, self-organizing, self-repairing multi-agent system inspired by biology. We have used HADES to propose a new messaging system utilizing agent death that will allow agents to remove malicious agents without knowledge about which agents are malicious.
 - Another version of HADES is an agent-based cancer simulation. We show that our agent signaling can be utilized to rid a tissue system of cancer cells, with different parameters working on different systems. We are currently adding traditional therapies such as radiation, chemotherapy, and surgery.
 - I have created a dynamical systems differential equations model of the basic interactions of cancer cells, showing when the cancer can be expected to overrun the system when there is no intervention.
 - A secondary research project is adding emotion-like mechanisms to agent decision-making in real-time strategic systems. This work has also become a new coordination framework for multi-agent systems.
- Presenting advancements in research for prospective & current students
- Webmaster for lab website

Alternative Sponsored Fellow, Pacific Northwest National Lab, Richland, WA. Summer 2007

- Mathematical Approaches to Infrastructure Resilience
 - Investigated potential properties that would indicate an insider security threat (unsolved problem)
 - Designed a Bayesian network to predict the likelihood of insider attacks

Software Design Engineer in Test Intern, Microsoft Corp, Redmond, WA. Summer 2005

- Designed and created testing tool in C# to allow testers to generate items for manual tests in Outlook
- Owned multiple features as primary tester – in charge of test planning, documentation, and execution
- Automation engineering in C#

Undergraduate Researcher, Computer Science, Virginia Tech, Blacksburg, VA. Fall 2004, Spring 2005

- Designed an agent communication library prototype in Java for a biologically inspired system

Teaching Assistant, Computer Science, Virginia Tech, Blacksburg, VA. Fall 2004, Spring 2005

- Assisted students with homework and projects, graded homework, created answer keys

SLBM Co-op, Naval Surface Warfare Center, Dahlgren, VA. Summer 2004

- Analyzed Submarine Launched Ballistic Missile (SLBM) software
- Security clearance: SECRET (interim obtained)

Honors

- Phi Beta Kappa (since 2005)
- Golden Key International Honour Society (since 2003)
- Summa Cum Laude (2005, 2009)
- 1st place Industry pick, Honorable Mention People's Choice – Virginia Tech Undergraduate Research in Computer Science Spring 2005 Symposium
- Collaborative Research Experience for Undergraduates (CREU) Research Grant, \$2500 total, Fall 2004 – Spring 2005
- Poem "The Shire" published in *The Best Poems and Poets of 2002*

Grants

- Grace Hopper Celebration of Women Scholarship, 2008
- Department of Homeland Security Graduate Fellowship, 2006-2009
- Verizon Rising Star Fellowship, 2007
- Google Anita Borg Scholarship, 2006
- NSF REU, Spring 2005
- Undergraduate Engineering & Computer Science Scholarships: Eleanor Davenport Leadership Scholarship, \$2000; Anne and George Gorsline Scholarship, Verizon Scholarship, Investment in Excellence Scholarship, \$1000 each
- Undergraduate Service Scholarship: William Wright Scholarship, \$500

Presentations & Refereed Publications

- M. Olsen, N. Siegelmann-Danieli, H. Siegelmann. Computational Modeling Reveals the Crucial Role of Cellular Citizenship in Selective Tumor Apoptosis. *Systems Biology of Human Disease*. June 2009.
- M. Olsen, K. Harrington, and H. Siegelmann. Utilizing Emotion in Strategic Real-Time Artificial Intelligence. Third North East Student Colloquium on Artificial Intelligence (NESCAI). May 2008.
- M. Olsen, N. Siegelmann-Danieli, and H. Siegelmann. Robust Artificial Life Via Artificial Programmed Death. *Artificial Intelligence*. 172 (2008) 884-898.
- M. Olsen, K. Harrington, H. Siegelmann. Emotions for Strategic Real-Time Systems. *AAAI Emotion, Personality, and Social Behavior Technical Report (SS-08-04)*, pp. 104-110. March 2008.
- M. Olsen, H. Siegelmann. A Multi-Agent System that Attains Longevity via Death. Second North East Student Colloquium on Artificial Intelligence (NESCAI). April 2007.
- M. Olsen and H. Siegelmann. Multi-Agent System that Attains Longevity via Death. *Proceedings of the Twentieth International Joint Conference on Artificial Intelligence (IJCAI)*. Jan 2007.
- M. Olsen and H. Siegelmann. Artificial Death for Attaining System Longevity. *Proceedings of the 50th Anniversary Summit of Artificial Intelligence*. pp. 217-218. July 2006.
- D. Guo, E.E. Santos, L. Fraser, M. Olsen. A Light-Weight Message Transport Framework for Multi-Agent based Simulation. *Proceedings of the International Conference on Parallel and Distributed Computing and Systems (IASTED)*. Nov 2005.
- M. Olsen, L. Fraser, D. Guo, E.E. Santos. Finding the Connection Between Networking and Cellular Communication. *Virginia Tech Undergraduate Research Computer Science Spring Symposium*. April 2005. Poster.
- M. Olsen, L. Fraser, D. Guo, E.E. Santos. Finding the Connection Between Networking and Cellular Communication. *Virginia Tech Undergraduate Research Symposium*. April 2005. Talk.

Activities

Girls Inc. BuildIT Volunteer (2009)
UMass CS Graduate Representative (2008-2009)
UMass CS Diversity Committee (2007-2008)
UMass CS Women's Group Chair (2006)
UMass Argentinean Tango Club (2005)
VT Association for Women in Computing (2001-2005): Women in Computing Day Chair
Virginia Tech Fencing Club (2001-2005): Vice President, Webmaster, Saber Squad Captain
Marching Virginians (2001-2003): Piccolo Rank Captain, Piccolo Section Webmaster
Golden Key International Honour Society (2003-2005): Chapter Webmaster, Regional Website Award
Computer Science Information Session Volunteer (2004-2005)
CS², Computer Science Community Service (2004-2005)

Graduate Courses

Fall 2005: Artificial Intelligence; Study of Consciousness
Spring 2006: Computational Complexity; Independent Study: Dynamical Systems and Genetic Networks
Fall 2006: Machine Learning; Information Theory
Spring 2007: Advanced Operating Systems; Computational Models of Emotion
Fall 2007: Advanced Algorithms
Spring 2008: Research Methods in Empirical Computer Science
Fall 2008: Advanced Software Engineering: Analysis; Computational Geometry