Michael K. Arnold

Contact Information

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Citizenship

USA

Research Interests

Modeling and Computer Simulation, Complex Adaptive Systems, Artificial Intelligence, Bioinformatics

Education

Auburn University, Auburn, AL, USA

M.S., Computer Science — **Expected Fall 2011**

- Adviser: Levent Yilmaz
- Thesis Topic: Automatic hypothesis generation and experiment testing for agent-based biological simulations.
- GPA: 4.0/4.0

B.SwE., Software Engineering — **December 2009**

- *Magna Cum Laude*
- Cumulative GPA: 3.61/4.0
- Major GPA: 3.78/4.0

Fellowships and Awards

National Science Foundation
- Research Experiences for Undergraduates — **Summer 2009**

Auburn University
- Tuition Fellowship — **Spring 2010 to Current**
- Auburn Board of Trustees Scholarship — **Fall 2008 to Fall 2009**

Academic Experience

Auburn University, Auburn, Alabama, USA

Graduate Teaching Assistant — **January 2011 to Present**

Instructor and grader for COMP 1000, Personal Computer Applications. This course is an introduction to PCs and software applications including Windows, Microsoft Word, Microsoft Excel, Microsoft Access, Microsoft PowerPoint, and Microsoft SharePoint.

Graduate Research Assistant — **January 2010 to Present**

He is currently the lead developer for SciBrowser, a computational ethnography tool written in Python. He is also currently working towards utilizing agent based modeling approaches to allow for automatic hypothesis generation and experiment testing using metaheuristics such as Genetic Programming and Ant Colony Optimization.

Undergraduate Research Assistant — **November 2008 to December 2009**

As an undergraduate, he developed an application in Python to visualize social network graphs, and calculate various graph metrics such as centrality and density. This work was the preliminary work which served as a prototype for the computational ethnography tool which is currently being designed.

Publications

1. Arnold M., D. Shenviwagle, and L. Yilmaz (2010). "SciBrowser: A Computational Ethnography Tool to Explore Open Source Science Communities," accepted to *Proceedings of The 48th ACM SouthEast Regional Conference*. Oxford, Mississippi. pp. 26:1–26:6 April 15-17, 2010. DOI 10.1145/1900008.190045.

Professional Experience

United States Navy

Missile Technician **June 2000 to May 2006**

As a missile technician, he was responsible for the maintenance and security of Trident D5 ballistic missiles. He was stationed on the SSBN 739 USS Nebraska Gold Crew in support of these operations. After approximately two years, he was transferred to Submarine Group Ten as an information support technician, where he was responsible for the maintenance of over 300 workstations, in excess of 10 servers, and shore side support for the submarines.

Projects

Standing Ovation Simulation

The standing ovation model is a model representing agents in an auditorium setting. This model is designed to represent how group dynamics allow for cascade reactions with regard to if agents decide to stand or remain seated. Additionally, I used a genetic algorithm to find the optimal auditorium layout given a certain agent vision function and with the fitness function representing the total number of agents standing over the max number of agents.

Rock Paper Scissors Command for the Android OS

Designed a game for the Android phone called Rock Paper Scissors Command. The game is similar to the normal missile command, except it has three different collision domains; eg. paper beats rock, rock beats scissors, and scissors beats paper. This game was written using the Android SDK, which uses a subset of the JDK.

SciBrowser

Scibrowser is a web based computational ethnography tool written in Python using Django. This tool not only visualizes social network graphs but also calculates metrics, such as density, centrality, and clustering coefficient, in order to enable researchers to more easily test theories on the resulting networks.

Skills

Toolkits

- Repast: Intermediate
- Mason: Intermediate

Programming Languages

- C++: Intermediate
- C: basic
- Java: Intermediate
- Python: Intermediate

References

Levent Yilmaz	Associate Professor	Auburn University	(334) 844-6343
Kai Chang	Department Chair	Auburn University	(334) 844-6310

Last updated: December 19, 2010

http://www.auburn.edu/~arnolmi/images/cv.pdf