

Paul H. McQuesten
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Education

- Doctor of Philosophy in Computer Science, University of Texas at Austin, August 2002
- Master of Science in Computer Science, minor in Economics, University of Texas at Austin, August 1996
- Bachelor of Science in Computer Science, *summa cum laude*, St. Edward's University, May 1994

Experience

***University of Redlands, Dept. of Math & Computer Science* 2002 – present**

- Assistant Professor: Teach courses in introductory programming, abstract data structures and object-oriented programming (C++ and Java), computer architecture and assembly language programming, comparative programming languages, and artificial intelligence. I believe that students best learn programming by writing programs. The challenge is to ensure that lab work does not decrease rigor nor obscure principles.

***Intelligent Technologies Corporation, Austin, TX* 1999 – 2001**

- Data Miner: Helped lead ITC to third-ranked private data mining company (per *Intelligent Enterprise* <http://www.dmreview.com/awards/top100/2000>). Constructed profiles which identified suspicious vendor transaction distributions. Developed multiple neural networks to estimate tax payoffs. Conceived and implemented Excel VBA mini-apps to navigate provider attributes and profile charts.

***University of Texas, Computer Science Dept., Austin, TX* 1995 – 1999**

- Research Assistant: Designed and implemented methods to evolve neural networks that solve various system control problems. Wrote the calculation engine in C++ and the GUI in Java. The parts are connected via sockets so they can run on different machines. The same source runs on both Windows/NT and Unix
- Teaching Assistant: Taught two sections of introductory undergraduate computer science (Pascal)
- Head T.A. for introductory CS course leading 6 T.A.s and supervising 18 proctors to serve 500 students by correcting and grading 8 quizzes, 9 programming assignments, and 3 examinations

***Software Publishing Corp., Santa Clara, CA* 1991 – 1992**

- Director of Software Technology: Directed external development of macro language technology to be integrated into all corporate applications; managed the contract and technical specifications; coordinated plans for adoption by internal projects.

Lucent Systems, Inc., San Jose, CA**1985 – 1990**

- Partner: Performed substantial overhaul of Harvard Project Manager which resulted in improved stability and reliability. Improved print output speed by a factor of ten by selecting more appropriate data structures and judicious application of assembly code.
- Developed network compatibility testing laboratory and methodology for a disk drive manufacturer; tested first models and trained staff.

Sorcim Corporation, San Jose, CA**1979 – 1985**

- Co-founder. Developed the SuperCalc electronic spreadsheet product: Specified architecture, design decomposition and algorithms; designed major data structures; authored expression evaluator, overlay scheme, terminal independence and product installation components. Designed and implemented a complete syntax and semantics front-end of a cross-compiler for the CHILL language.

Awards

- Microelectronics and Computer Development Fellow, University of Texas at Austin
- National Merit Scholarship, Michigan State University

Publications

- P. McQuesten (2002). *Cultural Enhancement of Neuroevolution*. PhD thesis, Tech Report AI02-295, Department of Computer Sciences, The University of Texas, Austin, TX.
<http://www.cs.utexas.edu/ftp/pub/AI-Lab/tech-reports/UT-AI-TR-02-295.pdf>
- P. McQuesten and R. Miikkulainen (1997). *Culling and Teaching in Neuro-Evolution* in **Proceedings of the Seventh International Conference on Genetic Algorithms**, East Lansing, MI.
- N. Richards, D. Moriarty, P. McQuesten, and R. Miikkulainen (1997). *Evolving Neural Networks to Play Go* in **Proceedings of the Seventh International Conference on Genetic Algorithms**, East Lansing, MI.

Service

- Reviewer for **Foundations of Genetic Algorithms 4** (1996), San Diego, CA
- Reviewer for **IEEE Transactions on Neural Networks**
- Reviewer for **IEEE Transactions on Evolutionary Computing**
- Reviewer for **Adaptive Behavior Journal** special issue on *Simulation Models of Social Agents*

- Reviewer for **Euro-Par 2002**: European Conference on Parallel Computing
- In 2007 I became a founding member of the organizing committee for the new Southwestern Region of the Consortium for Computing Sciences in Colleges <http://www.cpsc.org/southwestern>. I am a member of the Regional Board with responsibility for the web site. In addition, the April 2009 conference elected me to a three year term as Secretary.

Dissertation Abstract

Title: *Cultural Enhancement of Neuroevolution*

Supervisor: *Risto Miikkulainen*

Any transmission of behavior from one generation to the next via non-genetic means is a process of culture. Culture provides major advantages for survival in the biological world. This dissertation develops four methods that harness the mechanisms of culture to enhance the power of neuroevolution: culling overlarge litters, mate selection by complementary competence, phenotypic diversity maintenance, and teaching offspring to respond like an elder. The methods are efficient because they operate without requiring additional fitness evaluations, and because each method addresses a different aspect of neuroevolution, they also combine smoothly. The combined system balances diversity and selection pressure, and improves performance both in terms of learning speed and solution quality in sequential decision tasks.