Mark Richards

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Objective

- Full-time position in software research and development for technical applications, starting in June 2012

Education

- **University of Illinois at Urbana-Champaign**
  Ph.D., Computer Science, expected May 2012. GPA 3.78/4.00
  Thesis: Reasoning and Decisions in Partially Observable Games
- **Brigham Young University**
  M.S., Computer Science, 2004. GPA: 3.91/4.00
  B.S., Computer Science, 2002. GPA: 3.93/4.00
  Minor: Mathematics
- **Coursework Highlights**
  artificial intelligence (3), statistics (3), machine learning (2), parallel programming (3), numerical analysis (2), linear and nonlinear programming, compilers (2), mathematical logic, algorithmic game theory, networks, operating systems (2), software engineering, natural language processing (2)

Software Development Experience

- **Metron Scientific Solutions** Reston, VA, Summer 2009 and 2010
  Intern
  - Researched data association techniques for use in data fusion and multi-target tracking. Presented results to department technical staff. Implemented proposed Markov Chain Monte Carlo algorithm in Java using Eclipse IDE.
  - Proposed and implemented a resource allocation scheme for surveillance application, using dynamic programming.
- **Sandia National Laboratories** Albuquerque, NM, 2003-04
  Full-time Technical Staff (2004), Intern (2003)
  - Main developer of Surfpack C++ library for surface-fitting methods. Development included build harness (GNU autools), front-end scripting language (lex and yacc), test suite (CPPUnit)
  - Algorithms implemented include linear regression, moving least squares, radial basis functions, Kriging interpolation, multivariate adaptive regression splines
  - Added support for analytical derivatives where applicable.
  - Presented results at student symposium in 2003. Later published in AIAA/ISSMO 2006.
- **Oxford Worldwide Group** Provo, UT, Summer and Fall 2001
  Intern
  - Worked independently to design and implement neural network for proprietary biometric application.
  - Used Microsoft Visual Studio C++ for development and debugging.

Research

- Best paper award for "A training roadmap for new HPC users," in *TeraGrid*, 2011.
- Used Bayesian inference to improve opponent modeling to develop arguably the world's best Scrabble-playing program. Featured in IEEE Computer Magazine and New Scientist Magazine.
- Co-authored five additional refereed papers on probabilistic reasoning in partially observable games, surface-fitting algorithms, and particle swarm optimization

Teaching and Leadership

- Taught undergraduate computer architecture course at UIUC, Summer 2006.
- Teaching assistant for eight different computer science courses over 12 semesters at BYU and UIUC. Responsibilities included preparing and presenting lectures, writing and grading exams and projects.
- Extensive undergraduating mentoring in UIUC CS department. Results have included a refereed conference paper and two teams winning department awards for research ($800).