

Jonathan Dautrich

Objective To solve challenging, meaningful problems as a researcher and software engineer while working alongside other passionate developers in Southern California.

Skills / Technologies (years experience) **Languages:** Java (10), C/C++ (2), Python, HTML (5), JavaScript, CSS, PHP
Technologies: Java EE (4), JUnit (4) JSF (2), JPA (2), GlassFish (2), PrimeFaces (2), EclipseLink, AJAX, FreeBSD, MySQL, AutoIT, Amazon Web Services
Dev. Tools: Eclipse (9), NetBeans (2), Subversion (5), Git, Asana, VisualVM
Research Tools: Technical Writing in LaTeX (6), Analysis with Matlab (4)
Research Topics: Security / Data Privacy (5), PIR / Oblivious RAM (2), PQ-Trees (2), Bloom Filters, Steganography

Education **9/2008 – Present University of California, Riverside Riverside, CA**
PhD in Computer Security, 2014 4.0 GPA

- Data Mining
- Machine Learning
- Computer Security
- Database Management Systems
- Theory of Computation
- Design & Analysis of Algorithms
- Computational Biology Algorithms
- Software Verification Techniques

9/2005 – 6/2008 California State Polytechnic University Pomona, CA
Bachelor of Science, Computer Science, June 2008 3.97 GPA
Minor in Mathematics

- Graph Theory
- Secure Communications
- Proofs, Set Theory & Logic
- Cognitive Science
- Artificial Intelligence
- Laplace Transforms & Fourier Series

Work Experience **10/2011 – Present University of California, Riverside Riverside, CA**
Team Lead and Software Architect: Course Plan Project

- Led team of graduate and undergraduate students to develop an interactive course planning system to be deployed throughout the college of engineering.
- Developed a novel, partially-randomized, heuristic-driven optimization algorithm for assigning courses to terms in order to minimize time to graduation.
- Implemented using Java EE 7 on Oracle GlassFish 4 using Java Persistence Architecture, EclipseLink, MySQL, JSF Facelets, and PrimeFaces components.

Summer '10, '13 IDA-CCR La Jolla, CA
Adjunct Researcher (Computer security research)

Summer '11 IDA-CCS Bowie, MD
Adjunct Researcher (Computer security research)

5/2006 – 9/2008 Thales-Raytheon Systems Fullerton, CA
Software Engineer

- J2EE application software development – design, coding, and testing
- Software integration engineer: support, configuration, and testing of a large-scale J2EE command and control application, and a large array of COTS products

Academic Research

Current Work

- Preserving access pattern privacy for outsourced data using PIR and Oblivious RAM.
- Minimizing online bandwidth requirements for Oblivious RAM to reduce latencies.
- Introducing alternatives to the ORAM model that enable privacy-efficiency tradeoffs.

Publications

- Dautrich & Ravishankar: *Compromising Privacy in Precise Query Protocols*, Conference on Extending Database Technology (EDBT), March 2013.
- Dautrich & Ravishankar: *Inferential Time-Decaying Bloom Filters*, EDBT, March 2013.
- Dautrich & Ravishankar: *Security Limitations of Using Secret Sharing for Data Outsourcing*. Data & Applications Security & Privacy (DBSec), July 2012.

Papers and Technical Reports (jjldj.com/projects.html)

- *Finding Baseball/Softball Fields in Aerial Photos*. Data mining course project using Matlab to identify fields in Google Earth aerial photographs. (December 2009)
- *Multi-Class Steganalysis*. Machine learning course research project distinguishing images embedded using reversible steganographic schemes. (June 2009)
- *Minimizing Corrective Data in Difference Expansion Embedding*. Security course research project improving reversible steganography. (March 2009)
- Implementation of a dynamic schema interconnection framework for the ASyMTRe multi-robot coordination system. (Individual Senior Project, Spring/Summer 2008)

Presentations Conference Presentations

- *Compromising Privacy in Precise Query Protocols* and *Inferential Time-Decaying Bloom Filters*. EDBT, Genoa, Italy (March 2013)
- *Security Limitations of Using Secret Sharing for Data Outsourcing*. DBSec, Paris, France (July 2012)

Invited Talks

- *Oblivious RAM*. UCR CSE Department Colloquium (February 2014)
- *Securing Client Communications*. Riverside County Escrow Association (May 2012)
- *Cyber vs. Nuclear: The Stuxnet Worm*. Cal Poly Pomona SWIFT Student Club Technical Symposium (May 2011)

Teaching Experience

7/2009 – Present University of California, Riverside Riverside, CA

- Teaching assistant for undergraduate computer security. Responsible for teaching lab, preparing assignments, and grading exams. Course project utilized the OpenSSL C library. (Fall 2009, Fall 2010)
- Guest TA demonstrating WEP cracking (Fall 2012, Fall 2013)

Awards, Honors, & Qualifications

Scholarship & Fellowship Awards

- National Physical Science Consortium Fellowship (2011-Present)
- GAANN Fellowship, UCR (2010-2011)
- NSF GRFP Honorable Mention (April 2010)
- Boeing & Verizon Scholarships (Cal Poly Pomona) (2006-2008)

Achievement Awards & Recognitions

- Top 20 Score, US Cyber Challenge Cyber Quest (2012)
- Google CodeJam, Round 2, Rank 1537 (2012)
- First Place in Five Cal Poly Pomona Programming Contests (2005-2008)
- Team Achievement Awards (Thales-Raytheon Systems) (2007, 2008)
- Raytheon Six Sigma™ Specialist (2006)