

# Christopher Hall

SOFTWARE ENGINEER Chris@ChristopherKHall.com 818-621-5555

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## EDUCATION

University of California  
Santa Barbara  
2012 - 2017

- PhD Degree - Computer Science  
Area: Intersection of Human-Computer Interaction and Programming Languages  
Thesis topic: A New Human-Readability Infrastructure for Computing  
Recognition: John Vlissides grant winner at the OOPSLA'14 doctoral symposium

University of California  
Santa Barbara  
2007 - 2012

- Master's Degree - Computer Science, College of Engineering
  - Bachelor's Degree - Computer Science, College of Engineering
    - Graduated with Dean's Honors, High Honors, Honors Program Scholar, Distinction in the Major Accreditation Program (DiMAP)
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## WORK EXPERIENCE

Research Assistant  
(Four-Eyes Lab)  
2009 - 2017

- visualization tools and frameworks for real-time interaction with very large graphs
- computer security simulations
- situation-rooms with surround displays

**Google Inc.** (Venice, CA)  
SWE Internship  
June - September 2013

- Worked with the Content Ads Classification team
- Built a service for team members to browse and analyze their own machine-learned models to gain insight towards classification improvements
- This kind of explorative visibility into the models proved invaluable for sense-making
- The service was a C++ web server and a web front-end implemented in Java using Google's web toolkit framework that compiles to Javascript

**Google Inc.** (Venice, CA)  
SWE Internship  
June - September 2012

- Worked with the Content Ads Reservations team
- Helped the team reduce long-standing technical debt by refactoring a critical workflow in preparation for the launch of a new ad management system
- Simplified the interaction between teams over a co-owned resource by automating the safe synchronization of two overlapping data models
- CoderDojo volunteer for mentoring elementary-school groups

**National Security Agency** (D.C.)  
Research Internship  
June - September 2010

- Data analytics tools
- Currently holding an active TS DoD issued security clearance

**Kollmorgen** (Goleta, CA)  
(Previously known as MEI and Danaher Motion)  
Software Engineer  
2008-2010

- Responsible for scouting holes in motion-controller firmware test coverage
- In charge of overhauling a specific software product for a new major release, integrating the new features and improvements of the underlying hardware
- Acknowledged for personal strengths in graphical user-interface programming
- We exercised formal Scrum agile-development methodology / test-driven development / continuous integration
- Recruited into research and development

**Aspen Environmental Group** (Agoura Hills, CA)  
IT Technician / Web Dev.  
2005-2007

- Performed a diverse range of tasks, from maintaining general IT infrastructure and databases, to web development, 3D modeling, and audio/video production

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## RELEVANT PROJECTS & RESEARCH EXPERIENCE

### Personal Projects

- Multibody 2D-Physics Engine (C++, OpenGL)
- First-Person Game Engine (C++, CG)
- Multi-sensor Lifelogging App (C++, Maemo 5)
- Freeway Simulation Game (Embedded C++, NDS)
- Multiplayer Card Table Simulator (Java, Android)

Visit <http://www.christopherkhall.com> for more.

PhD Research at the intersection of Programming Languages and Human-Computer Interaction

**Area and Motivation:** I am interested in software-architecture approaches to the challenge of guaranteeing user-interface outlets for power users without compromising mainstream usability and simplicity. I believe that many aspects of computing are more rigid, self-defeating, and esoteric than they would otherwise have to be.

**Thesis Topic:** A New Human-Readability Infrastructure for Computing: Unifying Text, Data Structures, and User Interfaces into a single medium

### Contributions and Goals:

- Provide a layer below UTF8 and text editors, to embrace structure, metadata, inter-reference, and computation at the level of raw content
- Ubiquitize a structure-competent alternative to text editors to introduce human-readability into the realm of computation-friendly binary encodings
- Leverage the new metadata capacity to flood all corners of computing with the benefits of data-driven presentations and deconstructible user interfaces

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## TECHNICAL SKILLS AND PROFESSIONAL EMPHASIS

- Problem solving with an aesthetic touch
- Over 20 years of programming experience, with emphasis in **C++** and **Java**, and an academic relationship with **Smalltalk** and **Haskell**
- Building infrastructure tools / systems / libraries
- Backend architecture for user interfaces
- Supporting end-user development
- Leveraging Runtime-Reflection and Metaprogramming
- Helping software live up to its highest potential

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## PUBLICATIONS

- Hall, Christopher. "Infra: Structure All the Way Down - Structured Data as a Visual Programming Language". Systems, Programming, and Applications: Software for Humanity. ACM, 2017.
- Hall, Christopher. "Rethinking the human-readability infrastructure". Proceedings of the Workshop on Future Programming. ACM, 2015.
- Hall, Christopher. "HCI metacomputing: universal syntax, structured editing, and deconstructible user interfaces". Proceedings of the companion publication of the 2014 ACM SIGPLAN conference on Systems, Programming, and Applications: Software for Humanity. ACM, 2014.



