

# Nicholas Kelly

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**Objective** | To advance my education and experience in Computer/Electrical and Software engineering.

## Education

Jan 2014 - May 2016	<b>University of Texas at Austin — Austin, TX</b> M.S. in Computer Architecture and Embedded Systems (3.92 GPA) - Spring 2016
Sept 2009 - Jun 2013	<b>Oregon State University — Corvallis, OR</b> B.S. in Electrical/Computer Engineering (3.91 GPA) - Spring 2013

## Experience

Jun 2016 - Present	<b>CPU Core Architect — Intel   Hillsboro, OR</b> <ul style="list-style-type: none"><li>Core memory-system micro-architecture and various other areas</li><li>CPU performance modeling (C++) and analysis</li><li>Tooling improvements for data collection/analysis (Python, Ruby)</li></ul>
Jan 2015 - May 2016	<b>Graduate Research Assistant — Prof. Mattan Erez   UT Austin   Austin, TX</b> <ul style="list-style-type: none"><li>Resiliency characterization through error injection and simulation (C++, Python, Verilog)</li></ul>
May 2015 - Aug 2015	<b>Validation Intern — ARM   Austin, TX</b> <ul style="list-style-type: none"><li>Interconnect power and clocking validation/coverage</li></ul>
Jul 2014 - Jan 2015	<b>Post-Silicon Validation Intern — Intel   Austin, TX</b> <ul style="list-style-type: none"><li>Validation for emulator debug tools</li></ul>
Jun 2013 - Dec 2013	<b>Electrical Engineering Intern — NACCO Materials Handling Group, Inc.   Fairview, OR</b> <ul style="list-style-type: none"><li>Embedded Development (C/C++, ARM, ONFI Flash, SPI/I2C/UART, CANBus, WiFi)</li><li>PCB Design, Layout, and Assembly</li><li>.NET development (Windows, ASP.NET, C, SQL, CSS, Javascript)</li></ul>
Apr 2012 - Sept 2012	<b>Software Development Intern — Mentor Graphics   Wilsonville, OR</b> <ul style="list-style-type: none"><li>Perl, Tcl/tk, and shell scripting; C/C++ development</li><li>GUI (Tcl/tk) and CGI (Perl) development</li></ul>
Oct 2012 - Jun 2013	<b>Web Developer, EECS Research Project — Oregon State University   Corvallis, OR</b> <ul style="list-style-type: none"><li>Facebook application development</li><li>Data visualization and web interface (Javascript, Java servlets)</li></ul>
Jun 2011 - Jun 2013	<b>Student Web Developer — OSU Libraries   Corvallis, OR</b> <ul style="list-style-type: none"><li>Development of content (forms, pages, modules) using Drupal/PHP/Javascript</li><li>Page design using HTML/CSS</li><li>General routine tasks and maintenance work on pages</li></ul>

## Qualifications

<i>Computer Arch.</i>	<p>CPU simulation using C++, visualization, and analysis in Python/Pandas/Jupyter</p> <p>Scripting with Python, Ruby, Perl, and Tcl</p> <p>Embedded assembly and/or C development (PIC, AVR, MSP430, ARM)</p> <p>VLSI design with Verilog/SystemVerilog/UVM and various EDA tools</p> <p>Graphics theory and programming (OpenGL, CUDA)</p> <p>Coursework and research in computer architecture</p>
<i>Software</i>	<p>Continuous integration with TeamCity/GitHub/GitLab, for JS, Python, Ruby, and C++</p> <p>Unit-test frameworks, linting, coverage, and static-analysis within JS, Python, Ruby, and C++</p> <p>Runtime and memory profiling of C++ programs (VTune, valgrind, jeprof)</p> <p>Software-engineering practices (e.g. testing, OO, design patterns, etc.) teaching in industry</p>
<i>Electrical</i>	<p>Embedded assembly and/or C development (PIC, AVR, MSP430, ARM)</p> <p>VLSI design with Verilog/SystemVerilog/UVM and various EDA tools</p> <p>Analog circuit simulation (HSPICE, Spectre)</p> <p>Circuit layout for PCBs (Eagle, CircuitMaker) and silicon (Cadence)</p> <p>Coursework in embedded systems, graphics, computer architecture, and analog/digital circuits</p> <p>Knowledge of electrical parts, processes, and troubleshooting</p>
<i>Web Development</i>	<p>Front-end web development, including Javascript/jQuery, CSS/SASS, and HTML5</p> <p>Back-end web development, including C#, ASP.Net, Perl (CGI), Python, PHP/Drupal, Angular/Typescript/Node.js, and JSP/Servlets</p> <p>Databases, including MSSQL, MySQL, PostgreSQL, SQLite, and MongoDB</p> <p>GUI development, with GTK+, Qt, Tcl/tk, and iOS</p> <p>Game development, with Objective-C (iOS) and Actionscript 2.0/3.0</p>
<i>Additional</i>	<p>Communication and support skills, across teams</p> <p>Able to learn new material quickly</p>

## Selected Projects

<i>Jan 2014 - June 2016</i>	<p><b>Computer Architecture and Embedded (UT)</b></p> <ul style="list-style-type: none"><li>▪ x86 (subset of ISA) processor in structural-verilog (SystemVerilog, Python, x86)</li><li>▪ Realtime GPU Raytracing</li><li>▪ Lightcuts and Illumination</li><li>▪ An analysis of 3DIC Kogge-stone Adders</li><li>▪ Auto-Multithreading extension for Node.js and V8</li><li>▪ GPU Power virus (genetic algorithm, code generator)</li><li>▪ SDF scheduling genetic algorithm to optimize towards energy usage</li><li>▪ Development of custom RTOS for TI Launchpad (ARM)</li></ul>
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Sept 2012 - Jun 2013

### VLSI/Analog Design and Simulation Projects (OSU)

- Simulation of power-gating and near-threshold effects on power and delay for XOR gate
- Designed bike POV circuit using SystemVerilog, ModelSim, and Cadence Encounter (Place-and-route)
- Design, simulation (HSPICE/Spectre), and layout (Cadence) of OTAs for different specifications

2009 - Present

### Web and Game Development

- "The Wave", activity tracking with Facebook integration (Java servlets)
- "Rundezvous", running/biking/hiking tracking (PHP)
- "Boxarrific", iOS reaction game (Objective-C)
- "Artisan", iOS drawing/tracking game (Objective-C)
- Various Flash-based games (Actionscript 2.0/3.0)
- Personal websites (C#, ASP.Net; PHP; HTML5, JS, CSS)

## Publications

### Conferences

- Chang, C.; Lym, S.; **Kelly, N.**; Sullivan, M. B.; Erez, M., "Evaluating and Accelerating High-Fidelity Error Injection for HPC," In Proceedings of The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC). Dallas, TX. November, 2018.
- Meier, R.; **Kelly, N.**; Almog, O.; Chiang, P., "A Piezoelectric Energy-Harvesting Shoe System for Podiatric Sensing" Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE , pp.622,625,26-30 August 2014.

### Workshops

- Chang, C.; Lym, S.; **Kelly, N.**; Sullivan, M. B.; Erez, M., "Hamartia: A Fast and Accurate Error Injection Framework," Workshop on Silicon Errors in Logic-System Effects (SELSE). Boston, MA. April, 2018.

References available on request