

dan.luu@gmail.com\*

## OBJECTIVE

I want to work with smart people on a great team making awesome things, preferably in a big city

## EXPERIENCE

**Senior Hardware/Software Engineer, Google; Madison, WI** **2013 – Present**

- ◇ Details confidential; hardware/software co-design for warehouse scale computers -
- ◇ Order of magnitude latency improvement with multiple order of magnitude throughput improvement

**Student, Hacker School; New York, NY** **Spring 2013**

- ◇ Implemented channels and coroutines, using setjmp/longjmp<sup>1</sup> *C*
- ◇ Created an actor based BitTorrent client, using akka<sup>2</sup> *Scala*
- ◇ Contributed to reverse engineering jslinux<sup>34</sup> *JavaScript*
- ◇ Macros and metaprogramming<sup>5</sup> *Julia*
- ◇ Unsupervised learning and deep learning<sup>6</sup> *MATLAB, Octave, and Julia*
- ◇ Miscellaneous other open source contributions<sup>789</sup> *Rust, Julia, Scala, etc.*

**Member of Technical Staff, Centaur Technology (acquired by VIA); Austin, TX** **2005 – 2013**

- ◇ Recent projects are confidential. Here's an older six-month project (adding an ARM front-end to our x86):
  - ◇ Helped reverse engineer the ARMv7 ISA (this was pre-AArch64, and we didn't have an ARM license)
  - ◇ Created architectural simulator and got Android running on it *C*
  - ◇ Implemented 1/2 of the translator, and wrote associated microcode *Internal templating language*
  - ◇ Created test generator that found 90% of the first 1000 bugs on the project *F#*
  - ◇ Result was an ARMv7 processor with better performance than any current AArch64 processor
- ◇ Other roles included formal verification, adding fault tolerance to a distributed system, post-silicon debug, test tooling, etc.

**Research Assistant, Ultrafast Optics and Fiber Communications Lab; Lafayette, IN** **2003 – 2005**

- ◇ Sped up parallel (256 wavelength) polarimeter by 40x, from 50 Hz to 2 kHz *MATLAB and C*
- ◇ Designed and built Fourier transform spectroscopy interferometer *MATLAB and C*

**Intern, IBM; Austin, TX** **Summer 2003**

- ◇ Semi-formal / constrained random POWER6 completion unit functional verification *VHDL*

**Intern, Micron Technology; Boise, ID** **Summer 2002**

- ◇ Engineering hipster: worked on flash before it was cool *Perl*

**Research Assistant, Spatial Systems Research Laboratory; Madison, WI** **2001**

- ◇ Studied tilings and related combinatorial models, e.g., alternating sign matrices and square ice

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<sup>1</sup><https://github.com/danluu/setjmp-longjmp-ucontext-snippets>

<sup>2</sup><https://github.com/danluu/storrent>

<sup>3</sup><https://github.com/levskaya/jslinux-deobfuscated>

<sup>4</sup><http://bellard.org/jslinux/>

<sup>5</sup><https://github.com/danluu/funarg/>

<sup>6</sup><https://github.com/danluu/UFLDL-tutorial>

<sup>7</sup><https://github.com/JuliaLang/julia>

<sup>8</sup><https://github.com/mozilla/rust>

<sup>9</sup><https://github.com/xianyi/OpenBLAS>

## EDUCATION

**Electrical and Computer Engineering**  
**University of Texas, Austin, TX**

**2009 - 2013**

Just for fun. Mostly theory courses (Computational Learning Theory, Empirical Software Engineering, and Algorithms) and random research (Algorithmic Game Theory, Empirical Studies in Software Engineering)<sup>1011</sup>.

◇ GPA: 4.0

**M.S.E. Electrical and Computer Engineering**  
**Purdue University, West Lafayette, IN**

**2003 – 2005**

◇ GPA: 3.86 (4.0 in MS courses)

**B.S. Math and B.S. Computer Engineering, with distinction**  
**University of Wisconsin, Madison, WI**

**2000 – 2003**

◇ GPA: 3.61 (4.0 in upper-division and graduate level ECE courses)

## NON-WORK PROJECTS

◇ Sega system on Xilinx Vertex FPGA; translated Z80 instructions into RISC  $\mu$ ops<sup>12</sup>

*Verilog and VHDL*

◇ S-99: Ninety-Nine Scala Problems<sup>13</sup>

*Scala with JUnit*

◇ Formal verification of a secure hypervisor<sup>14</sup>

*ACL2*

◇ Project Euler<sup>15</sup>

*F# and bluespec*

## MISCELLANEOUS

◇ Languages: English mother tongue. Once-fluent Vietnamese. Once-functional (now moribund) Japanese and French. Willing (and eager) to learn any language

◇ Work Authorization: U.S. Citizen

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<sup>10</sup><http://ieeexplore.ieee.org/xpl/articleDetails.jsp?tp=&arnumber=6083170>, Evaluation & Assessment in Software Engineering (EASE 2011),

<sup>11</sup>Towards Evaluating Human-Instructable Software Agents, International Conference on Interfaces and Human Computer Interaction (ICIHCI 2011)

<sup>12</sup><https://github.com/danluu/sega-system-for-fpga>

<sup>13</sup><https://github.com/danluu/ninety-nine-scala-problems>

<sup>14</sup><https://github.com/danluu/secvisor-formal-verification>

<sup>15</sup><https://github.com/danluu/Project-Euler>