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EXPERIENCE

Microsoft, Engineer; Seattle, WA **2015 − Present**

◇ BitFunnel search engine. Near order of magnitude throughput/cost improvement *C++*

  ○ Replaced largest and most complicated part of the system with 30LOC; 2x perf improvement

  ○ Replaced poorly-understood ML configuration system with optimal mathematical formula

◇ SmartNIC; multiple order of magnitude tail latency improvement *SystemVerilog*

  ○ Half the latency of Amazon "enhanced networking"

Google, Engineer; Madison, WI **2013 − 2014**

◇ TPU (deep learning hardware accelerator); order of magnitude perf improvement over GPUs *SystemVerilog*

  ○ Took project from requirements gathering stage (2 people) to full implementation stage (∼20 people)

Recurse, Sabbatical; New York, NY **Spring 2013**

◇ Projects include channels and coroutines in C and a BitTorrent client in Scala.

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

◇ x86 and ARM chip design and verification *Verilog / scripting languages*

◇ Other projects included formal verification, adding fault tolerance to a distributed system, post-silicon debug, test tooling, etc.

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

◇ Lab work, included speeding up parallel (256 wavelength) polarimeter by 40x *MATLAB and C*

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

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

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

◇ Flash product engineering / characterization. Automated previously manual tasks. *Perl*

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

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

EDUCATION

BS Math & CMPE (Wisconsin, '00-'03), MS EE (Purdue, '03-'05)

NON-WORK PROJECTS

◇ Sega system on FPGA *https://github.com/danluu/sega-system-for-fpga*

◇ Randomized algorithms can beat LRU/psuedo-LRU caches: *http://danluu.com/2choices-eviction/*

◇ A fuzzer written in an hour that found ∼20 bugs in Julia *https://github.com/danluu/Fuzz.jl*

◇ Web performance benchmarks for slow/flaky connections *http://danluu.com/web-bloat/*

◇ Formal verification of a secure hypervisor model *https://github.com/danluu/secvisor-formal-verification*

◇ See *https://github.com/danluu/* and *http://danluu.com* for more!

MISCELLANEOUS

◇ Work Authorization: U.S. Citizen