

Luke Hsiao

PH.D. CANDIDATE · SYSTEMS SOFTWARE & NETWORKING

Palo Alto, California, USA · No visa sponsorship required to work in the US

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Education

- 2015—2021 **Ph.D. in Electrical Engineering**, Stanford University Stanford, CA
2015—2017 **M.S. in Electrical Engineering**, Stanford University Stanford, CA
2010—2015 **B.S. in Computer Engineering**, Brigham Young University · *Summa Cum Laude* Provo, UT

Skills

Programming Python, C, Rust, \LaTeX , Make, x86 Assembly

Systems/Tools Vim, Git, Linux, Perforce, AWS, GCE, CI/CD

Industry Experience

Software Engineering Intern

Sunnyvale, CA

GOOGLE

2020-06—2020-09

- Added support for TCP tx zerocopy (tx0cp) using io_uring in the Linux kernel.
- Profiled and optimized benchmarks to demonstrate an 18% improvement in CPU efficiency for tx0cp via io_uring.

Research Intern

New York, NY

GOOGLE

2019-06—2019-09

- Explored BBRv2 for many-to-one data center traffic, reducing latency and rtx rates by over 30% and 80%, respectively.
- Open sourced Transperf, a transport protocol performance tool for testing TCP over emulated network scenarios.

Software Engineering Intern

Santa Clara, CA

NVIDIA

2017-06—2017-09

- Worked with the drivers team to develop a new system-level Windows driver for gaming laptops.
- Designed and implemented secure APIs in kernel-space C code.

Software Engineering Intern

Orem, UT

NOVI SECURITY

2015-04—2015-06

- Prototyped embedded software architectures to analyze and improve testability.
- Built infrastructure for continuous integration and test-driven development (TDD) to improve productivity.

Research Experience

Ph.D. Research Assistant

Stanford, CA

STANFORD UNIVERSITY, *Advisors: Phil Levis and Keith Winstein*

2015-09—Present

- Area: Systems and Networking
- Current: Low-latency foveated video compression.
- Past: Generating hardware component knowledge bases using training data generation and multitask learning.

Undergraduate Research Assistant

Provo, UT

BRIGHAM YOUNG UNIVERSITY, *Advisor: Mike Wirthlin*

2014-04—2015-06

- Area: Embedded Systems, FPGA Reliability, Fault Injection
- Assisted in validation and development of Xilinx V5QV fault injection infrastructure.
- Designed and optimized VHDL components for use in FPGA reliability experiments.
- Developed standalone JTAG fault injection system for radiation testing using C/C++.

Teaching Experience

- W2019 **Graduate CA**, Introduction to Computer Networking (CS 144), Stanford University Stanford, CA
W2016 **Graduate Grader**, Program Analysis and Optimizations (CS 243), Stanford University Stanford, CA
W2014 **Undergraduate TA**, Data Structures and Algorithms (CS 235), Brigham Young University Provo, UT

Publications

PEER-REVIEWED

- 2019 **Automating the Generation of Hardware Component Knowledge Bases** LCTES
L. Hsiao, S. Wu, N. Chiang, C. Ré, and P. Levis
sing.stanford.edu/site/publications/hack-lctes19.pdf · github.com/lukehhsiao/lctes-p27
- 2018 **Fonduer: Knowledge Base Construction from Richly Formatted Data** SIGMOD
S. Wu, L. Hsiao, X. Cheng, B. Hancock, T. Rekatsinas, P. Levis, and C. Ré
sing.stanford.edu/site/publications/fonduer-sigmod18.pdf · github.com/HazyResearch/fonduer
- 2018 **Smart Contracts for Machine-to-Machine Communication: Possibilities and Limitations** IOTAS
Y. Hanada, L. Hsiao, and P. Levis
arxiv.org/abs/1806.00555
- 2015 **Estimating Soft Processor Soft Error Sensitivity through Fault Injection** FCCM
N. Harward, M. Gardiner, L. Hsiao, and M. Wirthlin
ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7160058
- 2014 **A Fault Injection System for Measuring Soft Processor Design Sensitivity on Virtex-5 FPGAs** FASA
N. Harward, M. Gardiner, L. Hsiao, and M. Wirthlin
link.springer.com/chapter/10.1007%2F978-3-319-14352-1_5

PRE-PRINTS

- 2019 **The Price of Free Illegal Live Streaming Services** arXiv
H. Ayers and L. Hsiao
arxiv.org/abs/1901.00579
- 2016 **TCPTuner: Congestion Control Your Way** arXiv
K. Miller and L. Hsiao
arxiv.org/abs/1605.01987 · github.com/Gasparila/TCPTuner

Stanford Graduate Coursework

- F2018 **Topics in Computer and Network Security (CS 356)**, Z. Durumeric
F2017 **Machine Learning (CS 229)**, A. Ng and D. Boneh
Sp2017 **Parallel Processors Beyond Multicore Processing (EE 382A)**, A. Blas
Sp2017 **Advanced Topics in Networking (CS 244)**, K. Winstein and S. Katti
W2017 **Database System Principles (CS 245)**, P. Bailis
W2017 **Introduction to Cryptography (CS 255)**, D. Boneh
F2016 **Embedded Systems Workshop (CS 241)**, P. Levis
F2016 **Advanced Multi-Core Systems (CS 316)**, C. Kozyrakis
Su2016 **Linear Dynamical Systems (EE 263)**, A. Momeni
Sp2016 **Computer and Network Security (CS 155)**, D. Boneh and J. Mitchell
Sp2016 **Computer Systems Architecture (EE 282)**, H. Litz and C. Delimitrou
W2016 **Network Application Studio (CS 344G)**, K. Winstein
W2016 **Program Analysis and Optimizations (CS 243)**, M. Lam
F2015 **Introduction to Computer Networking (CS 144)**, P. Levis and N. McKeown