Eric Lei

CONTACT INFORMATION

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RESEARCH INTERESTS

Signal processing, machine learning, information theory

EDUCATION

University of Pennsylvania, Philadelphia, PA — 2020 – Present
Ph.D. in *Electrical and Systems Engineering*, GPA 4.00
Concentration: Information and Decision Systems

Cornell University, Ithaca, NY — 2016 – 2020
B.S. in *Electrical and Computer Engineering*, GPA 3.92
Minors in *Mathematics* and *Computer Science*

HONORS & AWARDS

NSF Graduate Research Fellowship, *National Science Foundation* — 2020
Ganster Engineering Fellowship, *University of Pennsylvania* — 2020
The Dean's Fellowship, *University of Pennsylvania* — 2020
Sigma Xi — 2020
Tau Beta Pi — 2019
Eta Kappa Nu — 2018

RESEARCH EXPERIENCE

Warren Center for Network & Data Sciences (UPenn), Philadelphia, PA — Sep 2020 – Present
Graduate Research Fellow

- Exploring connections between machine learning and data compression
- Applications include structure-preserving compression and robust compressors

VLSI Information Processing Group (Cornell), Ithaca, NY — Feb 2018 – Jul 2020
Undergraduate Researcher, Prof. Christoph Studer

- Positioning and localization in multi-antenna wireless systems
- Developed parametric dimensionality reduction and metric learning methods to build novel supervised/unsupervised models for inferring location from channel-state-information

Computer Systems Laboratory (Cornell), Ithaca, NY — Jun 2017 – Aug 2017
Undergraduate Researcher, Prof. Zhiru Zhang

- Developed FPGA-accelerated implementations of cryptographic hash functions such as SHA and AES using high-level synthesis

INDUSTRY EXPERIENCE

Systems & Technology Research, Woburn, MA — Jun 2020 – Present
Research Intern, Cyber Physical Systems

- Developed efficient algorithms for graph mining problems by leveraging combinatorial graph solvers and heuristics tailored to applications

MIT Lincoln Laboratory, Lexington, MA — May 2019 – Aug 2019
Summer Research Intern, Group 99 (Integrated Systems and Concepts)

- Information theory and control systems design for free-space laser communication systems

MIT Lincoln Laboratory, Lexington, MA — Jun 2018 – Aug 2018
Summer Research Intern, Group 99 (Integrated Systems and Concepts)

- Read-out integrated circuits for imaging sensors. Performed RTL design and verification with synthesis/implementation on a Xilinx Ultrascale FPGA.

PUBLICATIONS & PRESENTATIONS

E. Gönültaş, **E. Lei**, J. Langerman, H. Huang, and C. Studer, "CSI-Based Multi-Antenna and Multi-Point Indoor Positioning Using Probability Fusion." *Under review.*

E. Lei, O. Castañeda, O. Tirkkonen, T. Goldstein, and C. Studer, "Siamese Neural Networks for Wireless Positioning and Channel Charting," *2019 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, 2019, pp. 200-207.

TEACHING

TA, ECE 3100: Intro to Probability and Inference (Cornell)	Spring 2020
TA, CS 4780: Machine Learning for Intelligent Systems (Cornell)	Fall 2019
TA, ECE 2300: Digital Logic and Computer Organization (Cornell)	Fall 2018
TA, ECE 1210: The Comp. Tech. Inside Your Smartphone (Cornell)	Spring 2018, 2019

OUTREACH

Summer STEM Institute — Summer 2021
Research Mentor

- Mentor high school students in various data science and ML projects

Expanding Your Horizons — April 2019
Volunteer

- Helped under-represented minorities in high school in a circuits workshop

Eta Kappa Nu — Oct. 2018 – Present
Member

- Led exam review sessions for freshman and sophomore level ECE classes

IEEE Cornell Student Branch — Sep. 2018 – Feb. 2019
Corporate Chair

- Hosted information sessions for industry recruiting, professor talks for the student body

Cornell University Engineering Success — Jan. 2018 – Dec. 2018
Tutor

- Tutor for students in Discrete Structures (CS 2800)

Cornell Cup Robotics — Jan. 2017 – Feb. 2018
Electrical Subteam Member

- Worked on electronic hardware and software for semi-autonomous R2-D2 robot

TECHNICAL SKILLS

Computer Languages: Python, MATLAB, C, C++, Java, Verilog
Libraries/Packages: PyTorch, Keras/Tensorflow, OpenMP, CVX, pybind11
Tools: Git, Xilinx Vivado, Cadence Innovus