

Eric Lei

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RESEARCH INTERESTS

Digital communications, signal processing, machine learning, high-performance computing.

EDUCATION

University of Pennsylvania

Ph.D. in *Electrical and Systems Engineering*

Advisors: *Prof. Hamed Hassani* and *Prof. Shirin Saeedi-Bidokhti*

Aug. 2020 – Present

Philadelphia, PA

Cornell University

B.S. in *Electrical and Computer Engineering*

Minors in *Mathematics* and *Computer Science*

GPA 3.88

Aug. 2016 – May 2020

Ithaca, NY

RESEARCH EXPERIENCE

The Warren Center for Network and Data Sciences

Graduate Research Assistant

Aug. 2020 – Present

Philadelphia, PA

- Optimization

VLSI Information Processing Group

Undergraduate Researcher with Prof. Christoph Studer

Feb. 2018 – Present

Ithaca, NY

- Positioning and localization in multi-antenna wireless systems
- Developed novel supervised and unsupervised inference models using Siamese neural networks to obtain location information from channel-state-information

Computer Systems Laboratory

Undergraduate Researcher with Prof. Zhiru Zhang

Jun. 2017 – Aug. 2017

Ithaca, NY

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

INDUSTRY EXPERIENCE

Systems & Technology Research

Summer Intern, Cyber Physical Systems

Jun. 2020 – Present

Woburn, MA

- Reverse-engineering VLSI hardware for cybersecurity

MIT Lincoln Laboratory

Summer Research Intern, Group 99 (Integrated Systems and Concepts)

May 2019 – Aug. 2019

Lexington, MA

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

MIT Lincoln Laboratory

Summer Research Intern, Group 99 (Integrated Systems and Concepts)

Jun. 2018 – Aug. 2018

Lexington, MA

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

PUBLICATIONS AND PRESENTATIONS

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.

E. Lei, O. Castañeda, and C. Studer, "Wireless Positioning via Twin Networks," poster presentation at *Cornell Undergraduate Research Board Symposium*, Ithaca, NY, USA, Spring 2019.

AWARDS

NSF Graduate Research Fellowship , <i>National Science Foundation</i>	2020
Ganster Engineering Fellowship , <i>University of Pennsylvania</i>	2020
The Dean's Fellowship , <i>University of Pennsylvania</i>	2020
Tau Beta Pi , <i>Engineering Honor Society</i>	2019
Eta Kappa Nu , <i>IEEE Honor Society</i>	2018
Dean's Honor List , <i>Cornell University College of Engineering</i>	Aug. 2016 – Present

TEACHING

ECE 3100: Intro to Probability and Inference	TA for Prof. Kevin Tang	Spring 2020
CS 4780: Machine Learning for Intelligent Systems	TA for Prof. Thorsten Joachims	Fall 2019
ECE 2300: Digital Logic and Computer Organization	TA for Prof. David Albonesi	Fall 2018
ECE 1210: The Comp. Tech. Inside Your Smartphone	TA for Prof. David Albonesi	Spring 2018, 2019

CAMPUS INVOLVEMENT AND OUTREACH

Expanding Your Horizons <i>Volunteer</i>	April 2019 <i>Ithaca, NY</i>
• Helped under-represented minorities in high school learn about circuits in an educational workshop	
Eta Kappa Nu (HKN) <i>Member</i>	Oct. 2018 – Present <i>Ithaca, NY</i>
• Led exam review sessions for freshman and sophomore level ECE classes	
IEEE Cornell Student Branch <i>Corporate Chair</i>	Sep. 2018 – Feb. 2019 <i>Ithaca, NY</i>
• Hosted information sessions for companies doing recruiting, professor talks for the student body	
Cornell University Engineering Success <i>Tutor</i>	Jan. 2018 – Dec. 2018 <i>Ithaca, NY</i>
• Tutor for students in CS 2800: Discrete Structures	
Cornell Cup Robotics <i>Electrical Subteam Member</i>	Jan. 2017 – Feb. 2018 <i>Ithaca, NY</i>
• Worked on electronic hardware and software for semi-autonomous R2-D2 robot	

TECHNICAL STRENGTHS

Computer Languages	C, C++, MATLAB, Python, Java, Verilog, R, PyMTL
Libraries/Packages	NumPy, SciPy, Tensorflow, Keras, Scikit Learn, OpenMP, CVXPY, PyBind, Rcpp
Tools	Git, Xilinx Vivado, Cadence Innovus