

# VINCENT T. LEE

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Computer Science and Engineering  
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## Objective

Computer science graduate student seeking internship experience that will build on and apply my research in computer architecture.

## Education

*University of Washington*

Ph.D Computer Science and Engineering - 2019 (Expected)

*University of Washington*

M.S. Computer Science and Engineering - May 2016

*University of California - Berkeley*

B.S. Electrical Engineering and Computer Science - May 2013

## Research Projects

*Solver-Aided Hardware Design*

August 2016 - Present

Summary: Leveraging solvers and program synthesis techniques to aid the end-to-end hardware accelerator design process.

*Practical Stochastic Computing*

August 2016 - Present

Summary: Quantifying the challenges and application codesign opportunities of stochastic computation.

*Near-Data Processing for Similarity Search*

June 2014 - November 2016

Summary: Application-driven codesign of similarity search with near-data processing technologies for computer vision applications.

*Hybrid Stochastic Neural Networks*

August 2016 - September 2016

Summary: Evaluating the potential of splitting computation between stochastic and binary-encoded domain for neural networks.

*Similarity Search on Automata Processors*

May 2016 - August 2016

Summary: Designing novel automata and architectural extensions for solving nearest neighbors on the Micron Automata Processor.

*A NetFPGA Prototype for In-Network Aggregation*

September 2013 - November 2015

Summary: Custom packet processing and router design for high-speed in-network packet aggregation.

## Awards

*Qualcomm Innovation Fellowship Finalist (2017)*

Program Synthesis for Domain Specific Reconfigurable Accelerators

*Qualcomm Innovation Fellowship Winner (2015)*

Systems and Architecture Support for Large Scale Video Search

## Teaching Experience

*University of Washington - Department of Computer Science and Engineering*

CSE390E: Electronics Disassembly Seminar (Autumn 2016)  
CSEP548: Computer Architecture (Autumn 2015)  
CSE467: Advanced Digital Logic Design (Winter 2015)  
CSE352: Hardware Design and Implementation (Autumn 2013)

*University of California - Berkeley: EECS Department*

CS150 Components and Design Techniques for Digital Systems (Fall 2012/Spring 2013)

## Professional Experience

*Graduate Student Research Assistant* September 2013 - Present  
University of Washington - Department of Computer Science and Engineering, Seattle, WA

*Research Intern* March 2015 - August 2015 [40 hours/week]

Oracle Labs - Belmont, CA

Summary: Worked with Oracle PGX team on exploring impact of near-data processing accelerators and heterogeneous computing substrates. Extended high level language tool for hardware design and source code generation.

*Engineering Intern* June 2013 - August 2013 [40 hours/week]

Qualcomm Incorporated - QTI Division, San Diego, CA

Summary: Worked with CoreBSP team to automate OS integration testing for subsystem restart.

*Engineering Intern* May 2012 - August 2012 [40 hours/week]

Qualcomm Incorporated - QCT Division, San Diego, CA

Summary: Worked APT QNX testing team augmenting test code base for smartphone bus drivers and APIs.

*Assistant II* June 2010 - January 2012 [10-20 hours/week]

University of California - Berkeley: EECS Department, Berkeley, CA

Summary: Redesigned laboratory curriculum for undergraduate introductory circuits course and developed curriculum infrastructure by developing course material.

## Papers

Vincent T. Lee, Justin Kotalik, Carlo C. Del Mundo, Armin Alaghi, Luis Ceze, Mark Oskin. "Similarity Search on Automata Processors" (Full Paper). International Parallel and Distribution Processing Symposium, 2017.

Vincent T. Lee, Armin Alaghi, John P. Hayes, Visvesh Sathe, Luis Ceze. "Energy-Efficient Hybrid Stochastic-Binary Neural Networks for Near-Sensor Computing" (Full Paper). Design Automation and Test Europe (DATE), 2017.

Vincent T. Lee, Luis Ceze, Mark Oskin. "Paperscope: Chronicling the History of Computer Architecture Research" (Technical Report). Technical Report UW-CSE-16-05-01, 2016. Featured in Architecture 2030 Workshop.

Vincent T. Lee, Carlo C. Del Mundo, Armin Alaghi, Luis Ceze, Mark Oskin, Ali Farhadi. "NCAM: Near-Data Processing for Nearest Neighbor Search" (Full Paper - preprint). Available on arXiv. June 2016.

Vincent T. Lee, Carlo C. Del Mundo, Eddie Yan, Armin Alaghi, Mark Oskin, Luis Ceze. "An Evaluation of Contemporary Heterogeneous Computing Platforms for Data Intensive Applications" (Short Paper). Workshop on Efficient Data Center Systems (EDCS), 2016.

Carlo C. Del Mundo, Vincent T. Lee, Luis Ceze, Mark Oskin. "NCAM: Near-Data Processing for Nearest Neighbor Search" (Extended Abstract). International Symposium on Memory Systems (MEMSYS), 2015.

Vincent T. Lee, Jacob Nelson, Mark Oskin, Luis Ceze. "A 10G NetFPGA Prototype for In-Network Aggregation" (Extended Abstract). Workshop on Architectural Research Prototyping (WARP), 2015.

Vincent Lee, Jennifer Monski, Winthrop Williams, Bharathwaj Muthuswamy, Tom Swiontek, Michel Marhabiz, Vivek Subramanian, Ferenc Kovac. "A Mixed Signal EEG Interface Circuit For Use In First Year Electronics Courses" International Symposium On Circuits and Systems (ISCAS), 2012.

**Technical Qualifications**

Java, Verilog, Python, C, C++, Matlab, Visio, Unix, Windows, Xilinx, Synopsys

**Relevant Coursework**

High Performance Computer Architecture  
Programming Languages  
Computer Architecture and Engineering  
VLSI Systems Design  
Operating Systems  
Machine Structures  
Probability and Random Processes

Computer Vision  
Components and Techniques for Digital Systems  
Computer Algorithms  
Introduction to Communication Networks  
Digital Signal Processing  
Signals and Systems

**Societies and Organizations**

*University of Washington CSE: Graduate Student Committee*  
Graduate Student Seminar Coordinator - 2014

*UC Berkeley Eta Kappa Nu: The EECS Engineering Honor Society - Mu Chapter*  
Service Officer - Spring 2012  
Student Relations Officer - Fall 2012

*UC Berkeley Tau Beta Pi: The (General) Engineering Honor Society - California Alpha Chapter*  
Pioneers in Engineering Liaison - Spring 2012  
Industrial Relations Officer - Fall 2011

*UC Berkeley Pioneers in Engineering*  
Mentorship Team - Fall 2011 / Spring 2012