

Seah Kim

Contact: seah@berkeley.edu

< Education >

University of California, Berkeley

Aug 2019 –

Degree: Ph.D. in Electrical Engineering and Computer Sciences

Advisor: Yakun Sophia Shao, Borivoje Nikolic

Seoul National University

Mar 2014 – Feb 2019

Degree: B.S. in Electrical and Computer Engineering

< Research Interest >

Computer Architecture and VLSI, SoC Design, Systems for ML, Design Methodology

< Publication >

****Excluding Workshops****

AuRORA: A Full-Stack Solution for Scalable and Virtualized Accelerator Integration

Seah Kim, Jerry Zhao, Krste Asanovic, Borivoje Nikolic, Yakun Sophia Shao

IEEE Micro (Top Picks 2023 Issue), July-August 2024.

DREAM: A Dynamic Scheduler for Dynamic Real-time, Multi-model ML Workloads

Seah Kim, Hyoukjun Kwon, Jinook Song, Jihyuck Jo, Yu-Hsin Chen, Liangzhen Lai, Vikas Chandra

ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), March 2023 (presented at ASPLOS 2024).

AuRORA: Virtualized Accelerator Orchestration for Multi-Tenant Workloads

Seah Kim, Jerry Zhao, Krste Asanovic, Borivoje Nikolic, Yakun Sophia Shao

International Symposium on Microarchitecture (MICRO), October 2023.

Selected as IEEE Micro Top Picks (2023)

RoSÉ: A Hardware-Software Co-Simulation Infrastructure Enabling Pre-Silicon Full-Stack Robotics SoC Evaluation

Dima Nikiforov, Shengjun Chris Dong, Chengyi Lux Zhang, Seah Kim, Borivoje Nikolic, Yakun Sophia Shao

International Symposium on Computer Architecture (ISCA), 2023.

ISCA Distinguished Artifact Award

MoCA: Memory-Centric, Adaptive Execution for Multi-Tenant Deep Neural Networks

Seah Kim, Hasan Genc, Vadim Nikiforov, Krste Asanovic, Borivoje Nikolic, Yakun Sophia Shao

IEEE International Symposium on High-Performance Computer Architecture (HPCA), March 2023.

Gemmini: Enabling Systematic Deep-Learning Architecture Evaluation via Full-Stack Integration

Hasan Genc, Seah Kim, Alon Amid, Ameer Haj-Ali, Vighnesh Iyer, Pranav Prakash, Jerry Zhao, Daniel Grubb, Harrison Liew, Howard Mao, Albert Ou, Colin Schmidt, Samuel Steffl, John Wright, Ion Stoica, Jonathan Ragan-Kelley, Krste Asanovic, Borivoje Nikolic, Yakun Sophia Shao

Design Automation Conference (DAC), December 2021.

DAC Best Paper Award

SuperNoVA: Algorithm-Hardware Co-Design for Resource-Aware SLAM

Seah Kim, Roger Hsiao, Borivoje Nikolic, James Demmel, Yakun Sophia Shao

Under Submission

< Experience >

[UC Berkeley]

Present

Graduate student researcher @ Berkeley Architecture Research

- Led 4x4mm² real-time ML chip tape-out using Intel 16nm (design submitted on December 2023, paper *under submission*)

[Meta Reality Labs]

May 2022 –

AI Research Intern

Aug 2022

- Worked on scheduler for AR/VR application
- Paper accepted (ASPLOS 2023)

[Apple]

May 2021 –

SPG intern

Aug 2021

- Design an accelerator architecture for sparse data structure
- Performance modeling for cycle-accurate simulation

[Seoul National University]

Jan 2018 –

Undergraduate Researcher @ Integrated Systems Design Lab (ISDL)

July 2019

Research Advisor: Prof. Deog-Kyoon Jeong

- Designed transmitter for automotive imaging sensor
- Participated in Samsung 28nm and TSMC 40nm CMOS tape-out of fractional digital phase locked loop using Injection Locking Oscillator

< Tutorial >

Full-System, Full-Stack ML SoC Architecture Research with FireSim, Chipyard, Gemmini and AuRORA at MICRO 2024

Seah Kim, Abraham Gonzalez, Jerry Zhao, Joonho Whangbo, Vikram Jain

International Symposium on Microarchitecture (MICRO), October 2024.

Gemmini: Generate Custom DNN Accelerators with Full-System Full-Stack Evaluation at MLSys 2024

Hasan Genc, Simon Guo, Seah Kim, Vadim Nikiforov

Machine Learning and Systems (MLSys), August 2022.

< Teaching Experience & Extracurricular Activity >

[UC Berkeley]

Fall 2022

GSI for Introduction to Digital Design and Integrated Circuits (EECS 151/251A)

Fall 2020

GSI for Great Ideas in Computer Architecture (CS 61C)

[Seoul National University]

2018

Worked as a tutor for major courses (Integrated Circuits)

2014

Worked as a class representative (Lullu, Department of ECE)

2014

Worked as a member of Campus Mentoring Program

< Award & Fellowship >

2024	MICRO PhD Forum
2024	Rising Stars in EECS
2024	AuRORA selected as IEEE Micro's Top Pick in Computer Architecture
2023	Selected as a Machine Learning and Systems Rising Star
2023, 2024	Qualcomm Innovation Fellowship Finalist
2023	ISCA Distinguished Artifact Award
2021	Paper selected as a DAC Best Paper
2020	AI Compute Symposium Top Poster Award <i>IBM and IEEE CAS/EDS</i>
2019 fall	EECS departmental fellowship <i>UC Berkeley</i>
2019 - 2022	Study Abroad Scholarship <i>Kwanjeong Educational Foundation</i>
2016 - 2018	National Scholarship for Science and Engineering <i>Korea Student Aid Foundation</i>

< Service >

2024	IISWC Artifact Evaluation Committee
2024	EECS Visit Day Area Student Lead Organizer