Brian C. **Schwedock**

SoC Architect

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Education

Carnegie Mellon University — *Pittsburgh, PA*
Ph.D in Electrical and Computer Engineering — *2017 - 2023*
Thesis: Optimizing Data Movement Through Software Control of General-Purpose Hardware Caches
Advisor: Nathan Beckmann

Carnegie Mellon University — *Pittsburgh, PA*
M.S. in Electrical and Computer Engineering — *2017 - 2019*

University of Southern California — *Los Angeles, CA*
B.S. in Computer Engineering and Computer Science (summa cum laude) — *2013 - 2017*
Minor in Mathematics

Professional Experience

Samsung — *San Jose, CA*
SoC Architect — *Aug 2023 - Present*
- Research and development for the architecture of Exynos mobile SoCs.

Carnegie Mellon University — *Pittsburgh, PA*
Graduate Research Assistant — *Aug 2017 - July 2023*
- Researching in computer architecture and computer systems.

Google — *Pittsburgh, PA*
Student Researcher — *Sep 2019 - Jan 2020*
- Cloud Storage team. Extended internship optimizing in-memory caches.

Google — *New York, NY*
Software Engineering Research Intern — *May - Aug, 2018 & 2019*
- Cloud Storage team. Built simulator for in-memory database cache. Optimized cache performance.

General Atomics Aeronautical Systems Inc. — *San Diego, CA*
Software Engineering Intern — *June - Aug 2017*
- Software Flight Controls group. Developed test scripts for UAV flight controls testing.

USC Teamcore Research Group — *Los Angeles, CA*
Undergraduate Research Assistant — *Sep 2015 - May 2017*
- Developed a linear program for PAWS, an app which solves a Stackelberg Security Game to combat poaching.
- Performed statistical analysis on crime data in Los Angeles.

Sami Shamoon College of Engineering — *Be'er Sheva, Israel*
Software Engineering Research Intern — *June - Aug 2016*
- Developed image processing enhancements in support of a Civil Engineering research project.
- Researched improvements for methodologies of unit testing.

ViaSat — *Carlsbad, CA*
Software Engineering Intern — *May - Aug 2015*
- Built a testing infrastructure deployable in the cloud to test software systems through inconvenient testing.

Publications

UDIR: Towards a Unified Compiler Framework for Reconfigurable Dataflow Architectures *WDDSA @ MICRO 2023*
Nikhil Agarwal, Mitchell Fream, Souradip Ghosh, *Brian C. Schwedock*, Nathan Beckmann

Kobold: Simplified Cache Coherence for Cache-Attached Accelerators *IEEE CAL 2023*
Jennifer Brana, *Brian C. Schwedock*, Yatin A. Manerkar, Nathan Beckmann

Kobold: Simplified Cache Coherence for Cache-Attached Accelerators *WDDSA @ MICRO 2022*
Jennifer Brana, *Brian C. Schwedock*, Yatin A. Manerkar, Nathan Beckmann

täkō: A Polymorphic Cache Hierarchy for General-Purpose Optimization of Data Movement *ISCA 2022 (Best Paper nominee)*
Brian C. Schwedock, Piratach Yoovidhya, Jennifer Seibert, Nathan Beckmann *Acceptance rate: 17%*

Jumanji: The Case for Dynamic NUCA in the Datacenter *MICRO 2020*
Brian C. Schwedock, Nathan Beckmann *Acceptance rate: 19%*

PAWS – A Deployed Game-Theoretic Application to Combat Poaching *AI Magazine 2017*
Fei Fang, Thanh H. Nguyen, Rob Pickles, Wai Y. Lam, Gopalasamy R. Clements, Bo An, Amandeep Singh, *Brian C. Schwedock*, Milind Tambe, Andrew Lemieux

Talks

Optimizing Data Movement through Software Control of General-Purpose CPU Caches *Qualcomm, 3 Jan 2023*
täkō: A Polymorphic Cache Hierarchy for General-Purpose Optimization of Data Movement *PDL Retreat, Pittsburgh, 8 Nov 2022*
täkō: A Polymorphic Cache Hierarchy for General-Purpose Optimization of Data Movement *ISCA, 20 June 2022*
Jumanji: The Case for Dynamic NUCA in the Datacenter *MICRO, 20 Oct 2020*

Awards

Best Paper nominee at ISCA *2022*
NSF Graduate Research Fellowship *2019 - 2022*
CMU ECE Ann and Martin McGuinn Graduate Fellowship (x2) *2019 - 2021*
CMU CIT Bertucci Fellowship *2017 - 2020*
USC Computer Engineering and Computer Science Outstanding Student Award *2017*
USC Boeing Scholarship (x2) *2015 - 2017*
USC Rose Hills Foundation Scholarship (x2) *2015 - 2017*
JFS-David Rubenstein Memorial Scholarship (x4) *2013 - 2017*
USC Moore Scholarship *2014 - 2015*

Teaching

18-746 Storage Systems *CMU*
Teaching Assistant *Fall, 2020 & 2021*

ITP-435 Professional C++ *USC*
Teaching Assistant *Spring 2017*

EE-355 Software Design for Electrical Engineers *USC*
Teaching Assistant *Spring, 2015 & 2016*

Mentoring

Jennifer Brana (B.S.) *Summer 2022 - Summer 2023*
Piratach Yoovidhya (B.S.) *Fall 2020 - Spring 2022*
Jennifer Seibert (B.S.) *Summer 2021*
Hanchen Yang (M.S.) *Fall 2019 - Spring 2020*
Amolak Nagi (B.S.) *Fall 2017 - Spring 2018*