Joshua Park

B.A. in Computer Science and Mathematics, M.A. in Statistics
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Updated June 5, 2025

TECHNICAL INTERESTS

HW-SW Co-Design, Machine Learning Model Compression, Computer Architecture, GPU Computing

EDUCATION

Master of Arts (A.M.), Statistics
Harvard University - Cambridge, Massachusetts
GPA: 3.96/4.0
Aug. 2023 - May 2025

Bachelor of Arts (A.B.), Computer Science and Mathematics
Summa Cum Laude, Phi Beta Kappa
Harvard College - Cambridge, Massachusetts
Advisor: Gu-Yeon Wei and David Brooks
GPA: 4.0/4.0
Aug. 2021 - May 2025

AWARDS & HONORS

Sophia Freund Prize, Harvard College — May 2025
Awarded annually to the students in the senior class of Harvard College who are graduating summa cum laude with the highest grade point average.

U.S. Presidential Scholar, U.S. Department of Education — May 2021
Each year, up to 161 students are named as Presidential Scholars, one of the nation's highest honors for high school students.

Ky and Yu-Fen Fan Scholarship, American Mathematical Society — Aug. 2020
Presented by the American Mathematical Society to a mathematically talented student to attend Program in Mathematics for Young Scientists (PROMYS).

TECHNICAL SKILLS

Programming Languages/Frameworks: C/C++, Python, CUDA
Hardware Description Languages: Verilog
DL Frameworks/Libraries: PyTorch, cuDNN

WORK EXPERIENCE

Deep Learning Software Engineering Intern — Summer 2024, 2025
NVIDIA Corporation - Santa Clara, CA

- Optimized **cuDNN** kernel selection to improve performance of machine learning workloads in PyTorch, TensorFlow, and JAX.
- Enhanced cuDNN forward compatibility capabilities for future GPU architectures by extending the support surface.
- Designed and implemented a compile-time reduction feature to accelerate execution of shape-similar operations.

Research Assistant — Oct. 2021 - May 2025
Architecture, Circuits and Compilers Laboratory, Harvard University - Cambridge, MA

- Contributed to GoldenEye, a testing framework for evaluating neural network resiliency under custom number systems.
- Wrote and optimized C driver code for ATROPOS, a BERT inference accelerator, with roughly 64× speedup compared to CPU.
- Theoretically proved optimal sparsity-quantization ordering; proposed and validated Quantization-Aware Sparsification (QAS) for improved accuracy in quantized models.

Quantitative Trader Intern Winter 2024
Five Rings Capital - New York, NY

- Participated in mock trading to obtain familiarity with how the market operates at the level of individual orders.
- Competed in automated trading strategy and design competition.
- Received classroom-style instruction on a wide range of financial concepts.

TEACHING EXPERIENCE

CS 124: Data Structures and Algorithms Spring 2025
Teaching Fellow, Instructors: Madhu Sudan and Sitan Chen

CS 181: Machine Learning Spring 2024, 2025
Teaching Fellow, Instructors: Finale Doshi-Velez and David Alvarez-Melis

Statistics 110: Probability Fall 2024
Teaching Fellow, Instructor: Joe Blitzstein

CS 61: Systems Programming and Machine Organization Fall 2023
Teaching Fellow, Instructor: James Mickens

CS 51: Abstraction and Design in Computation Spring 2023
Teaching Fellow, Instructor: Stuart Shieber

CS 50: Introduction to Computer Science Fall 2022
Teaching Fellow, Instructor: David Malan

Art of Problem Solving May - Oct. 2022
Grader and Teaching Assistant

PUBLICATIONS

Joseph Zuckerman, Martin Cochet, Maico Cassel dos Santos, Erik Jens Loscalzo, Karthik Swaminathan, Tianyu Jia, Davide Giri, Thierry Tambe, Jeff Jun Zhang, Alper Buyuktosunoglu, Kuan-Lin Chiu, Giuseppe Di Guglielmo, Paolo Mantovani, Luca Piccolboni, Gabriele Tombesi, David Trilla, John-David Wellman, En-Yu Yang, Aporva Amarnath, Ying Jing, Bakshree Mishra, **Joshua Park**, Vignesh Suresh, Samira Zaliasl, Michael Lekas, Stephen Cahill, Hesam Sadeghi, Joseph Meyer, Noah Sturcken, Sarita Adve, David Brooks, Gu-Yeon Wei, Kenneth L. Shepard, Pradip Bose, and Luca P. Carloni. 2025. EPOCHS-1: A 12nm Highly Heterogeneous Open-Source SoC with Distributed Coin Based Power Management and Integrated Hybrid Voltage Regulation. *IEEE Journal of Solid-State Circuits (JSSC)*.

Maico Cassel dos Santos, Tianyu Jia, Joseph Zuckerman , Martin Cochet, Davide Giri, Erik Jens Loscalzo, Karthik Swaminathan, Thierry Tambe, Jeff Jun Zhang, Alper Buyuktosunoglu, Kuan-Lin Chiu , Giuseppe Di Guglielmo, Paolo Mantovani, Luca Piccolboni, Gabriele Tombesi, David Trilla, John-David Wellman, En-Yu Yang, Aporva Amarnath, Ying Jing, Bakshree Mishra, **Joshua Park**, Vignesh Suresh, Sarita Adve, Pradip Bose, David Brooks, Luca P. Carloni, Kenneth L. Shepard, Gu-Yeon Wei. 2024. A 12nm Linux-SMP-Capable RISC-V SoC with 14 Accelerator Types, Distributed Hardware Power Management and Flexible NoC-based Data Orchestration. *IEEE International Solid-State Circuits Conference (ISSCC)*, Vol. 67, pp. 262-264.

TALKS

Joshua Park. 2025. Quantization, Sparsity, and Reliability. *Mohamed bin Zayed University of Artificial Intelligence.*

ACTIVITIES

Student and Researcher Summer 2019, 2020
Program in Mathematics for Young Scientists