David Jin

CURRICULUM VITAE

jindavid.me · GitHub
51 Vassar St, Building 45, Room 421G, Cambridge, MA 02139

EDUCATION

Massachusetts Institute of Technology
Cambridge, MA · May 2027 (expected)

M.S./Ph.D. in Computational Science and Engineering · GPA: 5.0/5.0
Advisors: Sungho Shin and Yoon Kim
Amazon AI Fellow, 2025-2027

California Institute of Technology
Pasadena, CA · June 2022

B.S. in Information and Data Science · GPA: 4.2/4.3

Grinnell College
Grinnell, IA · May 2021

B.A. in Physics · GPA: 4.0/4.0
Barry Goldwater Scholar, 2021-2022

RESEARCH INTERESTS

GPU computing, numerical optimization, and efficient machine learning.

PROFESSIONAL EXPERIENCE

Jump Trading
Quantitative Researcher Intern · New York, NY · May-August 2026

Designed and implemented GPU-accelerated algorithms for large-scale portfolio optimization.

Argonne National Laboratory
Research Intern · Lemont, IL · June-September 2025

Developed a distributed optimization framework across multiple supercomputers with heterogeneous architectures, including Aurora and Frontier.

Symbotic
Machine Learning Intern · Wilmington, MA · June-August 2024

Built a training pipeline for pose and shape estimation for large-scale multi-robot systems (more than 1,000 robots) in automated warehouses.

OPEN-SOURCE SOFTWARE

BlockDSS.jl
Creator, contributor, and maintainer · 2024-present

- Developed GPU-accelerated direct solvers for structured linear systems, including block-tridiagonal systems.
- Benchmarked against MA57, CHOLMOD, and cuDSS, demonstrating 20-50× speedups over CPU methods on large-scale problems.
- Integrated with Julia's scientific computing and optimization ecosystem, including MadNLP.

OpenMatch
Contributor · 2021-2022

- Contributed implementations of neural information retrieval models and support for building customized retrieval systems.
- Reproduced results on widely used information retrieval benchmarks.

PUBLICATIONS

Manuscripts

BiLoCo: Binary Low-Rank Corrections for LLM FP4 Decode
David Jin*, B. Islam Bouli*, T. Goel, G. Han, Yoon Kim
Submitted

AAAC: Activation-Aware Adaptive Codebooks for 4-bit LLM Weight Quantization
B. Islam Bouli*, **David Jin***
Submitted

Conference and journal publications

GPU-Accelerated Solution of Block-Tridiagonal Systems for Large-Scale Optimization
David Jin, Sungho Shin
IFAC World Congress 2026 | Code

GMKF: Generalized Moment Kalman Filter for Polynomial Systems with Arbitrary Noise
S. Teng, Harry Zhang*, **David Jin***, A. Jasour, M. Ghafarri, Luca Carlone
NeurIPS 2025

CRISP: Object Pose and Shape Estimation with Test-Time Adaptation
J. Shi, R. Talak, Harry Zhang, **David Jin**, Luca Carlone
CVPR 2025

Physics-Informed Neural Operator for Learning Partial Differential Equations
Zongyi Li, Hongkai Zheng, Nikola Kovachki, **David Jin**, Haoxuan Chen, Burigede Liu, Kamyar Azizzadenesheli, Anima Anandkumar
ACM/JMS Journal of Data Science, 1(3), 1-27 · 2024

Fusion-in-T5: Unifying Document Ranking Signals for Improved Information Retrieval
S. Yu, C. Fan, C. Xiong, **David Jin**, Z. Liu, Z. Liu
COLING 2024

Multi-Model 3D Registration: Finding Multiple Moving Objects in Cluttered Point Clouds
David Jin, Sushrut Karmalkar, Harry Zhang, Luca Carlone
ICRA 2024

TALKS

- **GPU-Accelerated Solution of Block-Tridiagonal Systems for Large-Scale Optimization.** IFAC World Congress, August 2026, Busan, South Korea.
- **GPU-Accelerated Solution of Block-Tridiagonal Systems for Large-Scale Optimization.** SIAM Parallel Processing, March 2026, Berlin, Germany.
- **GPU-Accelerated Solution of Block-Tridiagonal Systems for Large-Scale Optimization.** AIChE Annual Meeting, November 2025, Boston, USA. **Plenary talk.**
- **Multi-Model 3D Registration: Finding Multiple Moving Objects in Cluttered Point Clouds.** ICRA, May 2024, Yokohama, Japan.
- **Emulating Ray Tracing Using Machine Learning.** Joint Mathematics Meeting, January 2021, online (Washington, DC).
- **Laminar Chaos in an Electronic Mackey-Glass Variable Time Delay System.** APS March Meeting, March 2020, Denver, CO. Canceled.
- **The Effects of Gaps on the Correlation Dimension of Nonlinear Systems.** Midstates Consortium for Math and Science, November 2018, Washington University in St. Louis, St. Louis, MO.

TEACHING

Massachusetts Institute of Technology

Teaching Assistant

- Numerical Computation for Mechanical Engineers · Fall 2022

California Institute of Technology

Teaching Assistant

- Statistical Inference · Spring 2022
- Machine Learning and Data Mining · Winter 2022
- Foundations of Machine Learning and Statistical Inference · Winter 2022
- Introduction to Probabilistic Models · Fall 2021

Grinnell College

Teaching Assistant

- General Physics I · Spring 2020
- Modern Physics · Fall 2019
- Classical Mechanics · Spring 2019
- General Physics I · Fall 2018