Xiaokun (Ken) Zhong

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Work Authorization: U.S. Permanent Resident (I-485 filed, EB-5). No visa sponsorship required.

Education

University of California, Berkeley Jan 2026 – May 2026
Visiting Student, Computer Science & Mathematics *Berkeley, CA*
- Focus on data-efficient machine learning for physical systems, numerical optimization, and scalable training pipelines.

Hong Kong University of Science & Technology (HKUST) Sep 2022 – Jun 2026
BSc in Mathematics (Computer Science Track) *Hong Kong*
- Coursework: Differential Equations, Artificial Intelligence, Probability Theory.

Research & Engineering Experience

Dartmouth College & UC Berkeley Feb 2025 – Present
Research Engineer, Scientific Machine Learning *Remote / Berkeley, CA*
- Analyzed training instability of physics-constrained neural networks under stiff PDE regimes, identifying optimization pathologies via Hessian spectrum diagnostics.
- Designed and implemented second-order optimization pipelines (Newton-CG) in JAX and PyTorch, achieving up to 50% error reduction and faster convergence on benchmark PDE tasks.
- Built scalable experiment infrastructure on Slurm-based HPC clusters to support large-scale ablation studies and reproducible model evaluation.

HKUST Undergraduate Research Program Feb 2023 – May 2025
Research Engineer, Medical Imaging AI *Hong Kong*
- Developed deep learning pipelines for MRI reconstruction and 3D volumetric modeling from sparse 2D medical scans.
- Optimized data ingestion and preprocessing workflows in Python and C++ for large-scale imaging datasets.

Publications

Y. Hu*, **X. Zhong*** (co-first authors), et al. "Unveiling Multi-regime Patterns in SciML: Distinct Failure Modes and Regime-specific Optimization." Preprint, ICML 2026 submission under review.

Technical Skills

Machine Learning: PyTorch, JAX (Flax/Optax), TensorFlow, Scikit-learn, Physics-informed ML

Systems & Infrastructure: Linux, Docker, Slurm, Git, HPC workflows, Bash

Languages: Python, C++, SQL, MATLAB

Selected Projects

Secure Network Tunneling & Transport Optimization (Personal Project) Nov 2024
Systems Engineer *Remote*
- Designed and deployed a personal secure tunneling service (VLESS + Reality) on U.S.-based VPS infrastructure to improve reliability and latency for cross-region connectivity.
- Configured TLS-based transport, traffic obfuscation, and access control to harden the service against active probing and passive inspection.
- Optimized Linux networking parameters (e.g., TCP BBR) and monitored throughput/latency trade-offs under lossy network conditions.

Autonomous Robotics Vision System (RoboMaster) Oct 2022 – Jun 2023
Computer Vision Engineer *Hong Kong*
- Built real-time computer vision pipelines for autonomous target acquisition using OpenCV and Python.
- Implemented C++ drivers for sensor fusion and motor control on embedded STM32 platforms.

Industry Experience

Agricultural Bank of China Jan 2024 – Feb 2024
IT Intern (e-CNY Digital Currency) *Shenzhen, China*
- Tested and improved security and functionality of an internal e-CNY wallet system, contributing to a large-scale digital currency pilot.