Xiaokun (Ken) Zhong

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Work Authorization: US Permanent Residency EAD. **No Sponsorship Required.**

Education

University of California, Berkeley Jan 2026 – May 2026
Berkeley Global Access (Visiting Student) – CS & Mathematics *Berkeley, CA*
- Focus: Scientific Machine Learning, Advanced Probability, and High-Performance Computing.
- Previous Performance: Completed Summer Session 2023 (CS61A - Structure & Interpretation of Computer Programs), GPA: 3.5/4.0.

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

Research Experience

Dartmouth College & UC Berkeley (Scientific ML Group) Feb 2025 – Present
Research Assistant (Mentors: Prof. M. Mahoney, Prof. Y. Yang) *Remote / Berkeley, CA*
- **Hessian Analysis:** Investigating failure modes of Physics-Informed Neural Networks (PINNs) in high-stiffness regimes using eigenvalue spectrum analysis.
- **Algorithm Optimization:** Implemented custom second-order optimizers (Newton-CG) in **JAX** and **PyTorch**, improving prediction accuracy by 50% on specific PDE benchmarks.
- **HPC Infrastructure:** Engineered a scalable experiment pipeline using **Slurm, Bash, and Hydra** to manage concurrent training jobs on university supercomputing clusters.
- *Note: Codebase is currently private pending ICML 2026 submission; available for code review interview upon request.*

HKUST Undergraduate Research Program (UROP) Feb 2023 – May 2025
Research Assistant, Medical Image AI *Kowloon, Hong Kong*
- Designed U-Net architectures for MRI reconstruction, successfully rebuilding 3D human models from sparse 2D slices.
- Optimized data pipelines for medical imaging datasets using Python/C++, contributing to internal 3D rendering tools.

Publications

Y. Hu, H. Lu, **X. Zhong**, et al. "Loss Landscape Analysis of Scientific Machine Learning Models." *Preprint in preparation for ICML 2026.*

Technical Skills

Languages: Python (Advanced), C++, SQL, Bash, Lua, MATLAB
Machine Learning: JAX (Flax/Optax), PyTorch, TensorFlow, Scikit-learn, OpenCV, PINNs
Systems & Tools: Linux (Arch/Ubuntu), Neovim, Git, Docker, Slurm, Nginx, LaTeX

Projects

High-Performance Network Infrastructure Nov 2024
Systems Engineer *San Jose (Remote)*
- Deployed a secure, low-latency tunneling infrastructure on US-based VPS instances using modern TLS protocols.
- Optimized Linux kernel parameters (TCP BBR congestion control) to improve throughput by 40% in high-packet-loss environments.
- Implemented containerized services (Docker) with strict UFW firewall rules to harden server security against external scanning.

HKUST RoboMaster Team Oct 2022 – Jun 2023
Computer Vision Engineer *Hong Kong*
- Engineered a CV system for autonomous target acquisition using OpenCV and Python.
- Wrote C++ drivers for sensor fusion and motor control on embedded STM32 hardware.

Industry Experience

StarMerx International Inc. (Cross-Border E-Commerce) Jun 2024 – Aug 2024
Data Engineering Intern *Shenzhen, China*
- Designed Python ETL pipelines to aggregate competitor trend data, directly informing US market strategy.
- Developed automated ad-targeting scripts interacting with Shopify APIs, increasing ad placement efficiency.