

RICHARD GAO

Palo Alto, CA • richard_gao@brown.edu • [Website](#) • [Google Scholar](#)

EDUCATION

Brown University

M.S. in Computer Science • GPA: 4.0/4.0

*Providence, RI
Sep 2025 – May 2027*

- **Relevant Coursework:** Learning and Sequential Decision Making, Reintegrating AI, Topics in Self-Supervised Learning and World Models
- **Advisor:** George Konidaris

UC SANTA BARBARA

B.S. in Computer Science • GPA: 3.95/4.0

*Santa Barbara, CA
Sep 2021 – Dec 2024*

- **Relevant Coursework (* = graduate-level):** Network Modeling and Graph Machine Learning*, Uncertainty Quantification and Scientific Machine Learning*, Deep Learning, Natural Language Processing, Machine Learning, Artificial Intelligence, Vector Calculus, Linear Algebra, Probability and Statistics, Discrete Math
- **Honors:** Dean's Honors (all quarters), Graduated with High Honors (top 8.5%), SB Hacks, Coders SB
- **Advisor:** Zheng Zhang

PUBLICATIONS

[1] L. Maes, Q. Le Lidec, L. Facury, N. Massaudi, A. Chaurasia, F. Capuano, **R. Gao**, T. Gillin, D. Haramati, D. Scieur, Y. LeCun, R. Balestrero

stable-worldmodel: A Platform for Reproducible World Modeling Research and Evaluation

arXiv preprint, 2026.

EXPERIENCE

Arcade AI

AI Research & Engineering Intern

*San Francisco, CA
Jul 2025 – Dec 2025*

- Fine-tuned generative image models (Stable Diffusion, Flux) with models deployed for 3 client companies.
- Collaborated with clients on dataset selection and alignment, ensuring data supported company objectives.
- Researched methods in color transformation and RLHF and set up experiments to evaluate their effectiveness for our use cases.
- Responsible for all new overlaying techniques, spanning four different categories of furniture.

UCSB Electrical & Computer Engineering

Researcher

*Santa Barbara, CA
May 2024 – Jul 2025*

- Conducting research in efficient machine learning advised by Prof. Zheng Zhang.
- Researched meta-learning approaches to zeroth-order backpropagation-free training for adversarial attacks; implemented the Mamba state space model for meta-optimization.
- Benchmarking distillation to recover pre-training performance of low-rank activation LLMs and Vision Transformers.
- Attend weekly seminars and lab meetings to present findings and discuss novel, efficient ML papers.

SELECTED PROJECTS

KAN We Tensorize GraphSAGE

Nov 2024

- Explored Kolmogorov-Arnold Networks (KANs) as an alternative to multilayer perceptrons in GraphSAGE.
- Investigated compression using tensor-train decomposition on learnable weights of GraphSAGE.
- Implemented modified aggregators in PyTorch and performed experiments on protein-protein interactions, scientific paper network citations, and a synthetic dataset.
- Demonstrated the effectiveness of KAN layers and the low tensor rank of GraphSAGE weights.

ZEROTH-ORDER SPIKING NEURAL NETWORK TRAINING

May 2024

- Developed end-to-end training for non-differentiable spiking neural networks for neuromorphic computing.
- Used local zeroth-order gradient with LSTM meta-learning for variance reduction.
- Demonstrated transferability of the learned optimizer to different spiking neural network architectures.

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- Implemented in PyTorch, achieved fast convergence and high accuracy against SoTA optimizers on MNIST.

SKILLS & INTERESTS

Programming Languages: C++, C, Python, Java, JavaScript, SQL

Skills: PyTorch, Jax, Numpy, MATLAB

Languages: English (fluent), Mandarin (fluent), Spanish (conversational)

Interests: Piano, Basketball, Badminton, Botany, Poker