Kirato Yoshihara

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GitHub
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Publications

[1] "Modular Norm RandOpt: Population-Efficient Ensembling through Architecture-Aware Perturbations"
Kirato Yoshihara, Hiroaki Hamade. *Under Review @ ICLR 2027. Accepted at NeurReps @ NeurIPS 2026 (Extended Abstract Track)*. [ICLR OpenReview] [NeurReps OpenReview] [Project Page]

[2] "VesselBridge3D: A Foundation Model Adaptation Framework for Label-Efficient 3D Vessel Segmentation"
Kirato Yoshihara, Yohei Sugawara, Yuta Tokuoka, Lihang Hong. *SWITCH+ Workshop @ MICCAI 2026*. Springer LNCS proceedings. **Selected for Spotlight.** [arXiv] [Code]

[3] "Different Layers, Different Manifolds: Module-Wise Weight-Space Geometry in Transformer Optimization."
Kirato Yoshihara. *Weight-Space Symmetries (WSS) @ ICML 2026* [OpenReview] [Blog] [Code]

[4] "Horizon-Controlled State Propagation for Resource-Adaptive Mamba Inference."
Kirato Yoshihara. preprint [PDF]

Education

B.Eng. in Systems Science (2023 Apr – 2027 Mar)
School of Engineering Science, The University of Osaka - CGPA: 3.54, Major GPA: 3.71

Related Coursework
Data Structures & Algorithms · Discrete Optimization · Machine Learning · Computer Networks · Robotics · Computer Vision · Human–Computer Interaction · Computer Architecture

Fellowships

Nakajima Foundation Fellowship
Competitive Japanese scholarship (~10 recipients/year; typically 2–3 in CS): ¥400,000/month (~US$2,500) for up to 5 years, plus up to ¥3M/year (~US$18,750) toward tuition for the first 2 years.

Experience

Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) | Visiting Student Researcher, Abu Dhabi (Sep 2026 - Present)

- **Faculty hosts:** Prof. Junpei Komiyama, Prof. Raul Astudillo
- **Research:** Improving reliability in protein generation by using intermediate structural consistency to predict downstream fold quality.

National Institute of Advanced Industrial Science and Technology | Research Intern, Remote (Jun 2025 - Present)

- **Proposed** prompt-conditioned influence-function steering for video-caption granularity across fine/coarse × local/global regimes, and built a corresponding annotated dataset.

Preferred Networks, Inc. | Machine Learning Research Intern, Tokyo (Aug 2025 - Mar 2026)

- **Outperformed** state-of-the-art methods (nnU-Net, SwinUNETR) in vessel segmentation as measured by a 30% relative improvement in few-shot Dice scores (0.4342 vs. 0.3341) and up to 45% over transformer baselines by developing a novel framework that adapts a pre-trained DINOv3 backbone with lightweight 3D adapters and multi-scale aggregators.

Selected Research Writing

- **Verifiable Docking: Repairing Only What Needs to Move** (Sep 2026) — Evaluated clash-guided local repair for molecular docking with global-relaxation fallback, matching baseline top-5 joint success while reducing ligand displacement on a held-out PoseX set.
- **Rethinking 0x5F3759DF for GPUs** (May 2026) — Investigated FP16/BF16 inverse-square-root approximations with mantissa-conditioned lookup tables and evaluated accuracy–throughput trade-offs on an NVIDIA A100.
- **The Chimera Estimator: Fixing KL Divergence Gradients in High Dimensions** (Apr 2026) — Explored gradient variance in Monte Carlo KL estimators and a stop-gradient construction combining k3 forward values with k1 gradients. Received positive feedback from John Schulman.

Academic Service

- **Reviewer**, NeurReps Workshop @ NeurIPS 2026.

Open-Source Contributions

- **brainrender-napari** (Neuroinformatics Unit) — Implemented a real-time atlas download progress bar and optimized data refresh timing, accelerating the handling of large-volume datasets.

Technical Skills

- **Programming:** Python, C/C++, TypeScript/JavaScript
- **Frameworks:** PyTorch, React/Next.js, FastAPI
- **Databases & Tools:** PostgreSQL, Git, Docker, Linux
- **Languages:** Japanese (Native) · English (**TOEFL iBT 110**) · French (Conversational)