Shunsuke Onoo

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Education

M.S. in Informatics Oct 2022 – Expected Mar 2026
Kyoto University, Japan

- Advisor: Prof. Yukiyasu Kamitani
- Research focus: Neural representation in vision and language models

B.S. in Physics Apr 2017 – Mar 2022
Kyoto University, Japan

- Undergraduate research: "Development and Analysis of an X-ray Map of the Galactic Center Using Data from the XMM-Newton Satellite"

Research Experience

Graduate Research Assistant Aug 2023 – Present
Kamitani Lab, Kyoto University

Project 1: Modeling multimodal contextual modulation in the brain using multimodal large language models

- Aimed to model the context dependent neural representation in the human brain using multimodal large language models
- Initiated the research project, and conducted computational experiments, including finetuning multimodal language models leveraging distributed training

Project 2: Readout Representation:Redefining neural codes by input recovery

- Proposed a novel redefinition of neural representation from the perspective of information, and examined the representation of deep neural networks.
- Initiated the research project, conducted computational experiments, authored a paper. Experiment includes reconstructing texts from latent representations of large language models using GPU clusters.
- The paper was accepted at the International Conference on Learning Representations (ICLR) 2026.

Publications and Presentations

Publications

Onoo, S., Nagano, Y., & Kamitani, Y. (2026). Readout representation: redefining neural codes by input recovery. *International Conference on Learning Representations*. https://doi.org/10.48550/arXiv.2510.12228

Presentations

Onoo, S., Nagano, Y., & Kamitani, Y. (2025, December). Readout representation: redefining neural codes by input recovery. Poster presented at the Kyoto University Intelligence Science Symposium, Kyoto, Japan.

Technical Experience

Contributor to bdpy (Python package for brain decoding analysis) Jul 2024 – Present

- Identified bugs and performance bottlenecks in torch-related scripts, and implemented fixes

Server Administration and Maintenance Oct 2025 – Present

- Performed troubleshooting and maintenance of servers

Teaching Experience

Teaching Assistant, Neuroinformatics class Apr 2023 – Mar 2024
Kyoto University

- Course covering neuroscience and machine learning fundamentals
- Created and graded homework assignments focused on implementing machine learning models
- Supported students by answering questions and providing guidance

Honors and Awards

Omoro International Research Support Program 2019

- Awarded 300,000 JPY for an international research project
- Proposed and conducted field research on human-river interaction along the Yukon River, Canada

Kyoto University Tuition Exemption 2017 – 2021, 2022 – 2023

- Awarded for academic performance under financial hardship

Technical Skills

Programming Languages: Python, Bash, C++
Machine Learning: PyTorch, HuggingFace Transformers, DeepSpeed, scikit-learn
Scientific Computing: NumPy, Pandas, Matplotlib, SciPy
Tools: Git, Docker, Weights & Biases, Ansible
Computational Resources: AWS EC2, GPU clusters

Languages

- Japanese: Native
- English: Proficient user (CEFR C1): TOEFL iBT 104, IELTS 7.5