Yusuke Ozaki

Kwansei Gakuin University, School of Engineering, Program of Computer Science
Exchange Student, Department of Computer Science, University at Albany, SUNY

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Objective

- Seeking a Summer 2026 internship in machine learning and AI for science.
- Interested in problems at the intersection of Bayesian optimization, graph neural networks, active learning, and lab-automation–oriented machine learning.
- Aiming to contribute to robust, data-efficient machine learning systems and tools, including optimization engines, recommender systems, and agent-based platforms for real-world applications.

Education

- **Kwansei Gakuin University** *Apr. 2022 – Mar. 2027 (expected)*
  Bachelor of Engineering in Computer Science, School of Engineering Sanda, Hyogo, Japan
  ◦ GPA: 3.62/4.00
- **University at Albany, SUNY** *Aug. 2025 – May 2026 (expected)*
  Exchange Student, Department of Computer Science Albany, NY, USA

Research Interests

- AI for bioengineering and biology, including graph neural networks (GNNs) for molecular and cellular systems and gene regulatory network (GRN) inference from single-cell omics data.
- Design of active-learning (Bayesian optimization) frameworks that autonomously drive scientific experiments, with a focus on protocol-aware lab automation and data-efficient exploration of experimental conditions.

Presentations

[1] Yusuke Ozaki (Sep. 2025). **Object-Flow Machine Learning: Active learning framework utilizing protocols information**. Poster presented in the Non-Archival Content Track at the *AutoML Conference 2025 (AutoML 2025)*, New York City, USA, Sep. 2025.

[2] Yusuke Ozaki (May 2025). **Development of a machine learning method utilizing experimental protocols to predict outcomes and active learning framework employing the method**. Oral presentation at the *Student Symposium 2025, RIKEN Center for Biosystems Dynamics Research*, Kobe, Japan, May 2025.

[3] Yusuke Ozaki (Feb. 2025). **Development of a machine learning method utilizing protocols to predict experimental outcomes**. Poster presentation at the *Spring School for Theoretical Biology 2025 (2025)*, Hiroshima University, Hiroshima, Japan, Feb. 2025.

Experience

- **RIKEN Center for Biosystems Dynamics Research, Laboratory for Biologically Inspired Computing [🌐]** *Jun 2024 – Aug 2025*
  Research Part-timer II Kobe, Japan
  ◦ Worked in Koichi Takahashi's Laboratory for Biologically Inspired Computing on AI- and robotics-driven automation of wet-lab experiments.
  ◦ Developed machine-learning based experimental simulators and protocol-aware active learning workflows for optimizing high-throughput experiments using automated liquid-handling systems.
  ◦ Contributed to Python codebases and data-processing pipelines for integrating experiment logs, protocol representations, and optimization results.
- **Yachie Laboratory [🌐]** *Feb 2025 – Aug 2025*
  Research Assistant Osaka Japan
  ◦ Assisted in computational projects on gene regulatory network inference from single-cell omics data, combining transcriptomic and chromatin-accessibility measurements.
  ◦ Built and maintained analysis pipelines for single-cell RNA-seq and ATAC-seq using Python-based tools and graph/network modeling methods.
  ◦ Collaborated with experimental biologists to interpret network models and compare alternative GRN-inference workflows.
- **Metadata Incorporated [🌐]** *Apr 2024 – Jun 2024*
  Software Engineer (Part-time), Web Application Development Remote, Japan

- Developed and maintained web applications for AI-driven enterprise services, focusing on backend API implementation and integration with existing systems.
- Implemented and tested RESTful endpoints, simple user-facing interfaces, and data-processing components in collaboration with senior engineers.

Projects

- **Bayesian Optimization with Gaussian Process Panel Models (GPM)** *Aug 2025 – Present*
  Tools: Python, Gaussian Processes, Preference-based Bayesian Optimization, Linear/Nonlinear Models
  - Studying preference-based Bayesian optimization where observations are modeled by a General Preference Embedding Model (GPM), jointly learning latent utility functions and structured observation models at University at Albany, SUNY.
  - Analyzing regret bounds and identifiability issues when combining learned embeddings with Gaussian process models for decision making.
- **Minimal-Edges Graph Neural Networks for Efficient Graph Learning** *Aug 2024 – Present*
  Tools: Python, PyTorch, PyTorch Geometric, Graph Neural Networks, Reinforcement Learning
  - Designed a graph neural network architecture that learns task-specific sparse adjacency structures layer by layer to reduce the number of edges used in convolution at Kwansei Gakuin University.
  - Implemented an actor–critic style edge-selection module (Adjacency Generator) that optimizes graph sparsification using policy gradient methods.
- **Capstone Project in Computer Science: Methodology for Asset Operation LLM Agents** *Aug. 2025 – Present*
  Department of Computer Science, University at Albany, SUNY
  - Developing a methodology and software framework for Asset Operation LLM Agents, combining large language models with structured task planning, tool calling, and evaluation pipelines.
  - Implementing core components such as agent prompts, trajectory logging, and automatic DAG/plan evaluation to support reproducible experimentation on industrial asset-operations benchmarks.

Leadership Experience

- **Technical Lead, Campus Activity Recommender (HackRPI 2025)** *Nov. 2025*
  HackRPI 2025, Rensselaer Polytechnic Institute
  - Led a small team to design and implement a campus club and event recommender web application during a 24-hour hackathon, coordinating backend design (LinUCB bandit engine, Flask APIs, database schema).
- **Team Lead, Capstone Project in Computer Science** *Aug. 2025 – Present*
  Department of Computer Science, University at Albany, SUNY
  - Leading a multi-student team for the senior capstone software project.

Skills

- **Programming Languages:** Python, C, Java
- **Web Technologies & APIs:** Flask, RESTful APIs, JSON, Google Calendar API, Gemini API
- **Database Systems:** PostgreSQL (incl. pgvector/pg_trgm), SQLite
- **Data Science & Machine Learning:** PyTorch, PyTorch Geometric, scikit-learn, NumPy, pandas, SciPy, matplotlib
- **DevOps & Version Control:** Git, GitHub, Docker, Docker Compose, Linux (Ubuntu/Debian), pyenv, virtualenv
- **Specialized Areas:** Graph Neural Networks (GNNs), Bayesian Optimization, Active Learning, Preference-based BO (GPM), Reinforcement Learning, Single-cell omics analysis, Gene Regulatory Network (GRN) inference, Lab-automation / protocol-aware ML
- **Mathematical & Statistical Tools:** Linear algebra, probability theory, optimization, Bayesian modeling, graphical models (pgmpy)

Honors and Awards

- **Keyence Foundation Student Scholarship** *Jul 2024*
  Keyence Foundation (Public Interest Incorporated Foundation)
- **Gyomu Super Japan Dream Foundation Study Abroad Scholarship** *Aug 2025 – Present*
  Public Interest Incorporated Foundation Gyomu Super Japan Dream Foundation

Additional Information

Languages: Japanese (Native), English (Working proficiency; TOEFL iBT 79)
Scientific Interests: AI for Science and lab automation, synthetic biology and bioinformatics, graph neural networks and Bayesian optimization, single-cell omics and gene regulatory networks, active learning and preference-based optimization
Hobbies: Brazilian Jiu-Jitsu, reading books

REFERENCES

1. **Chong Liu**
   Assistant Professor, Department of Computer Science
   University at Albany, SUNY
   Email: cliu24@albany.edu
   Relationship: Research advisor (Bayesian optimization)

2. **Koichi Takahashi**
   Team Director (Principal Investigator), Laboratory for Biologically Inspired Computing
   RIKEN Center for Biosystems Dynamics Research (BDR), Kobe / Osaka, Japan
   Email: ktakahashi@riken.jp
   Relationship: Research supervisor at RIKEN (wet-lab automation and AI for Science/robotics projects)

3. **Akihiro Inokuchi**
   Professor, Program of Computer Science, School of Engineering
   Kwansei Gakuin University, Hyogo, Japan
   Relationship: Undergraduate research advisor (graph mining, graph neural networks, data science)