Haruki YONEKURA

PH.D CANDIDATE · THE UNIVERSITY OF OSAKA, MOBILE COMPUTING LAB

Yamadaoka 1-5, Suita, Osaka 565-0871, Japan 5F of Bldg. A, Graduate School of Information Science and Technology, the University of Osaka

(+81) 80-3863-6609 | yonekura.haruki.2000@gmail.com | yone550.github.io | Yone550 | haruki-yonekura | Haruki YONEKURA

Summary

Haruki Yonekura is a Ph.D. candidate in the Mobile Computing Laboratory at the University of Osaka and an AI BOOST Fellow. His broad research interest lies in applying computer science, especially machine learning, to real-world pervasive computing. This is reflected in his publications spanning diverse areas, including geoinformation and privacy, LLM agents for smart homes and smart cities, high-performance computing, wireless sensing, and the integration of vision-language models with biosensing. Beyond leading projects as a primary author, he frequently contributes as a supportive team member, accelerating research progress while demonstrating both leadership and a collaborative spirit.

Education

Graduate School of Information Science and Technology, The University of Osaka *Osaka, Japan*

PH.D. CANDIDATE, MOBILE COMPUTING LABORATORY ⚭ HTTPS://MC.NET.IST.OSAKA-U.AC.JP/EN/ *Apr. 2024 – Mar. 2027(Expected)*

- **AI BOOST Scholarship** funded by JST (Japan Science and Technology Agency).

Graduate School of Information Science and Technology, Osaka University *Osaka, Japan*

M.SC. IN INFORMATION AND COMPUTER SCIENCE *Apr. 2022 – Mar. 2024*

- Thesis title: *Human Daily Activity Patterns Generation with LLM for Smart Home Simulator*.

School of Engineering Science, Osaka University *Osaka, Japan*

ASSOCIATE DEGREE IN INFORMATION AND COMPUTER SCIENCE *Apr. 2019 – Mar. 2022*

- *Skipped senior year for early graduation*.

Experience

Internship Student *Kyoto, Japan*

CYBERAGENT AI LAB – ACTIVITY UNDERSTANDING TEAM *2025*

- Two-month internship designing and developing an LLM-agent in Gaussian Splatting Space.

Student Trainee *Hyogo, Japan*

RIKEN, NATIONAL RESEARCH AND DEVELOPMENT AGENCY – CENTER FOR COMPUTATIONAL SCIENCE, – LARGE-SCALE DIGITAL

TWIN RESEARCH TEAM ⚭ *2024 – Present*

HTTPS://WWW.RIKEN.JP/EN/RESEARCH/LABS/R-CCS/LARGESC_DIGITALTWIN/INDEX.HTML

- Conducting large-scale digital twin research in HPC environments.

Research Assistant *Osaka, Japan*

CREST (JAPAN SCIENCE AND TECHNOLOGY AGENCY) ⚭ *2022 – Present*

HTTPS://WWW.JST.GO.JP/KISOKEN/CREST/EN/PROJECT/1111114/1111114_2021.HTML

- Research Title: *"A Platform for Digitalizing Knowledge of Regional Communities"*.

Internship Student *Kanagawa, Japan*

SONY SEMICONDUCTOR SOLUTIONS *2022*

- Three-week internship designing and developing a comfortable virtual keyboard using synchronous multi-focal camera technology.

Teaching Fellow / Assistant *Osaka, Japan*

THE UNIVERSITY OF OSAKA *2022 – 2025*

- Instructed five undergraduate courses across multiple semesters.
- Course Titles: Basic Programming (C language, Python, & shell scripts), Logic Circuit, Learning of Logical Thinking by Contract Bridge.

Research Interests

DIGITAL TWIN ARCHITECTURES & LLM-DRIVEN MULTI-AGENT BEHAVIORAL SIMULATION

- Construction of large-scale digital twins and LLM-powered multi-agent systems for smart homes and city-scale human behavior modelling.

PRIVACY-PRESERVING SPATIOTEMPORAL DATA ANALYTICS & PREDICTIVE MODELING

- Development of distributed taxi-demand forecasting and mobility data de-identification techniques that balance data utility with user privacy, demonstrated in large-scale geospatial applications.

DEVICE-FREE WIRELESS SENSING FOR INDOOR ENVIRONMENT

- Pioneered the first RTT-based indoor human-counting framework leveraging IEEE 802.11az Fine Timing Measurement and deep learning for privacy-preserving, high-fidelity people counting/localization in cluttered environments.

Publications

Please also refer to my Google Scholar and my Portfolio.

JOURNAL PAPER(S)

1. H. Yonekura, H. Rizk, and H. Yamaguchi. "Round trip time meets transformers: high-fidelity human counting in cluttered environments." Neural Computing and Applications (2025), Q1 Journal: 1-27.

INTERNATIONAL CONFERENCE PROCEEDINGS

1. H. Yonekura, R. Ozeki, T. Amano, H. Rizk, and H. Yamaguchi, "MobText-SISA: Efficient Machine Unlearning for Mobility Logs with Spatio-Temporal and Natural-Language Data," in Proceedings of the 33rd ACM International Conference on Advances in Geographic Information Systems(ACM SIGSPATIAL), 2025, *CORE RANK A*, to appear.

2. R. Ozeki, H. Yonekura, H. Rizk and H. Yamaguchi, "Cellular-based Indoor Localization with Adapted LLM and Label-aware Contrastive Learning," In 2025 IEEE International Conference on Smart Computing (SMARTCOMP) (pp. 138-145).

3. R. Ozeki, H. Yonekura, H. Rizk and H. Yamaguchi, "Privacy preserved taxi demand prediction system for distributed data," in Proceedings of the 32nd ACM International Conference on Advances in Geographic Information Systems(ACM SIGSPATIAL), 2024, *CORE RANK A*, Pages 123-134.

4. H. Yonekura, F. Tanaka, T. Mizumoto, and H. Yamaguchi, "Generating human daily activities with llm for smart home simulator agents," In 2024 International Conference on Intelligent Environments (IE), CORE RANK B, (pp. 93-96), *Best Short Paper Award*. IEEE.

5. R. Ozeki, H. Yonekura, H. Rizk, and H. Yamaguchi, "Decentralized landslide disaster prediction for imbalanced and distributed data," in 2024 IEEE International Conference on Pervasive Computing and Communications (PerCom), *CORE RANK A**, IEEE, 2024, pp. 143–150.

6. R. Ozeki, H. Yonekura, A. Baimbetova, H. Rizk, and H. Yamaguchi, "One model fits all: Cross-region taxi-demand forecasting," in Proceedings of the 31st ACM International Conference on Advances in Geographic Information Systems(ACM SIGSPATIAL), *CORE RANK A*, 2023, pp. 1–4.

7. R. Ozeki, H. Yonekura, H. Rizk, and H. Yamaguchi, "Balancing privacy and utility of spatio-temporal data for taxi-demand prediction," in 2023 24th IEEE International Conference on Mobile Data Management (MDM), *CORE RANK B*, IEEE, 2023, pp. 215–220.

INTERNATIONAL WORKSHOP PROCEEDINGS

1. Y. Takeuchi, H. Yonekura, K. Yamashita and H. Yamaguchi, "Evaluating Attribute Inference Risks in Urban Care Taxi Arrival Time Prediction Models Using Geospatial Data," The 14th International Workshop on Urban Computing, held in conjunction with the 31st ACM SIGKDD 2025.

2. H. Yonekura, R. Ozeki, H. Rizk and H. Yamaguchi, "Restoring super-high resolution gps mobility data," in Proceedings of the 2nd ACM SIGSPATIAL International Workshop on Geo-Privacy and Data Utility for Smart Societies, GeoPrivacy '24, Pages 19 - 24.

INTERNATIONAL PEER-REVIEWED POSTERS, DEMOS, AND OTHERS

1. H. Yonekura, K. Tanigaki, and T. Kuroiwa: "What Does AI See through Animals' Eyes?: Zero-Shot Activity Recognition from Bio-loggers," In Companion of the 2025 on ACM International Joint Conference on Pervasive and Ubiquitous Computing(UbiComp), Student Challenge, to appear.

2. H. Yonekura, H. Rizk, and H. Yamaguchi: "Device-Independent Wireless Sensing: Time-Series Analysis of Continuous Round Trip Time for Indoor Environment," In Proceedings of the 19th International Symposium on Spatial and Temporal Databases(SSTD), Thesis and Dissertation Track, to appear.

3. H. Yonekura, and Hirozumi Yamaguchi, "LLM as Personable Decision-Making Model for Smart Home Simulation," 2025 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops). IEEE, 2025.

4. H. Yonekura, Fukuharu Tanaka, and Hirozumi Yamaguchi, "Towards High-Performance and City-Scale Human Behavior Simulation with LLM-Powered Multi-Agent System," 1 page poster paper at International Conference on High Performance Computing in Asia-Pacific Region.

5. Fukuharu Tanaka, H. Yonekura, and Hirozumi Yamaguchi, "Policy Evaluation Platform for Parallel Multi-Agent Simulation on High Performance Computing Infrastructure", 1 page poster paper at International Conference on High Performance Computing in Asia-Pacific Region. 2025.

6. H. Yonekura, H. Rizk, and H. Yamaguchi, "Poster: Translating Vision into Words: Advancing Object Recognition with Visual-Language Models," in The 22nd ACM International Conference on Mobile Systems, Applications, and Services (MobiSys'24), ACM, pp. 740 - 741.

7. H. Yonekura, R. Ozeki, H. Rizk, and H. Yamaguchi, "STM - A Privacy-enhanced Solution for Spatio-temporal Trajectory Management," in 2023 24th IEEE International Conference on Mobile Data Management (MDM), Demo Paper, IEEE, 2023, pp. 168–171.

8. R. Ozeki, H. Yonekura, H. Rizk, and H. Yamaguchi, "Sharing without Caring: Privacy Protection of Users' Spatio-temporal Data without Compromise on Utility," in Proceedings of the 30th International Conference on Advances in Geographic Information Systems(ACM SIGSPATIAL), Student Research Competition(Undergraduate Student), 2022, pp. 1–2.

Honors & Awards

2025	**Selected**, IEEE Region 10 Young Professionals Volunteer Collective 2025 (48 out of 237 applications)	*IEEE Region 10 YP 2025*
2025	**Participation**, International HPC Summer School (IHPCSS 2025)	*IHPCSS 2025*
2024	**Best Short Paper Award**, "Generating human daily activities with LLM for smart home simulator agents"	*IE 2024*
2024	**Participation**, MobiSys 2024 ASSET Symposium (Asian Student Symposium on Emerging Technologies)	*MobiSys2024*
2024	**Scholarship**, AI BOOST Scholarship funded by JST (Japan Science and Technology Agency)	
2024	**Repayment Exemption**, 50% repayment exemption for Japan Student Services Organization (JASSO) Type 1 Student Loan due to my exceptional research and school achievement	
2023	**Best Poster Award**, "One Model Fits All: Cross-Region Taxi-Demand Forecasting"	*SIGSPATIAL 2023*
2022	**Third Prize**, Student Research Competition (Undergraduate) – "Sharing without Caring: Privacy Protection of Users' Spatio-Temporal Data without Compromise on Utility"	*SIGSPATIAL 2022*
2022	**Student Travel Grant**, ACM SIGSPATIAL 2022	

Skills

DevOps/Tools	Docker, Singularity, Linux, Google Cloud Platform
Programming	Python(Machine Learning Framework, GIS Modeling, Large Language Model, ⋯), Java, C Programming Language, SQL, R, VHDL
Languages	English, Japanese

Professional Services

- ACM SIGKDD(Knowledge Discovery and Data Mining) 2025, Student Volunteer

- ACM SIGSPATIAL(International Conference on Advances in Geographic Information Systems) 2025 Applications Track, TPC Member

- ICMU(The 15th International Conference on Mobile Computing and Ubiquitous Networking 2025), TPC Member

- JAC-ECC(the International Japan-Africa Conference on Electronics Communications and Computations in 2024), Subreviewer/External Reviewer

Extracurricular Activity

Japan Contract Bridge Youth National Team

Veldhoven, the Netherlands & Ningbo, China

ELECTED MEMBER (U26)   *2023*

- Competed in the 18th World Youth Teams Championships in Veldhoven.
- Achieved Third Prize at the 24th Asia Pacific Bridge Federation Youth Championships in Ningbo.
- Developed a public web service enabling large-scale Monte-Carlo simulations of contract-bridge auctions directly in the browser.

Japan Contract Bridge Youngster National Team

ELECTED MEMBER (U21)   *2020*

- Represented Japan in the U21 category at international youth bridge competitions.