Yohei Ohata Curriculum Vitae

Center for Information and Neural Networks
National Institute of Information and Communications Technology
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Education

The University of Tokyo April 2022 – March 2024
M.S. in Human Factors Engineering
Department of Human and Engineered Environmental Studies
Cumulative GPA: 4.0/4.0
Thesis: Identifying Different Thought Processes for Each Learner Using Eye-Tracking and Hidden Markov Models
1st in Class (1/48), Dean's Award, Best Department Thesis Award

Tokyo University of Science April 2018 – March 2022
B.E. in Electrical and Electronic Engineering
Department of Applied Electronics
Cumulative GPA: 3.5/4.0
Thesis: A Method of Designing a Hilbert Transformer with Transmission Zeros at Specified Positions

Employment

National Institute of Information and Communications Technology January 2026 – Present
Research Assistant
Center for Information and Neural Networks (CiNet)
Computational Social Neuroscience Group

Hitachi, Ltd., April 2024 – December 2025
Research Engineer
R&D Group

Publications

Articles in Peer-Reviewed Journals

J1 **Ohata, Y.**, Hachisuka, S., Kurita, K., & Warisawa, S. (submitted). Identifying Different Thought Processes for Each Learner Using Eye-Tracking and Hidden Markov Models. *Human Factors*.

Peer-Reviewed Conference Proceedings

C1 **Ohata, Y.**, Hachisuka, S., Kurita, K., & Warisawa, S. (2024). Visualizing and Revealing the Difference of Learner's Thought Process and Question Solving Method. *In Proceedings of International Conference on Information and Communication Technology*.

C2 **Ohata, Y.**, Takao, K., Natori, T., & Aikawa, N (2021). A Method of Designing a Hilbert Transformer with Transmission Zeros at Specified Positions. *ICICE Technical Report*.

Conference Presentations

P1 **Ohata, Y.**, Hachisuka, S., Kurita, K., & Warisawa, S. (2023). Analysis of How Learners Learn Using Graphic Questions. *The 42nd Annual Conference of Japanese Society for Educational Technology.*

P2 **Ohata, Y.**, Hachisuka, S., Kurita, K., & Warisawa, S. (2022). Identifying Perceptual Factors that Influence Impression of a Teacher in a Classroom. *The 41st Annual Conference of Japanese Society for Educational Technology.*

Patents

T1 **Ohata, Y.**, Jin, Y. (2024). "Management Issues Estimation Device". JP-Patent.

T2 **Ohata, Y.**, Jin, Y. (2025). "Management Issues Estimation System Using Bayesian Network and Large Language Models". JP-Patent.

Research Experience

Research Assistant January 2026 – Present
National Institute of Information and Communications Technology
Laboratory: Computational Neuroscience & Decision Making Laboratory
Supervisor: Haruno Masahiko

- Investigating papers dealing with alignment between LLM representations and human fMRI responses using brain decoding foundation models
- Developed a toy attention-only Transformer model to examine how contextual representations are generated, updated, and used for next-token prediction

Research Assistant September 2025 – Present
The University of Tokyo
Laboratory: Amano & Nakayama Lab
Supervisor: Yamashita Ayumu, Amano Kaoru

- Performed denoising on the DMCC55B Open fMRI dataset (AX-CPT, Cued Task Switching, Sternberg, Stroop) using BrainSync for synchronized cross-subject temporal alignment (MATLAB).
- Applied NASCAR tensor decomposition to the DMCC55B dataset to decompose data into spatial, temporal, and subject-load modes (MATLAB).
- Quantified cognitive control performance by indexing RT and Accuracy via the Cognitive Control Index, extracting contributory components using conditional randomization testing (R).

Research Assistant April 2022 – March 2024
The University of Tokyo
Laboratory: Inovative Learning Creation Lab
Supervisor: Hachisuka Satori, Warisawa Shin'ichi

- Designed experimental protocols for both adult and elementary school participants, including the development of a web-based UI and logging system using HTML/CSS/JS.
- Managed high-fidelity eye-tracking data collection and processing using Tobii Pro 3 and Tobii Pro Lab.
- Performed advanced statistical analysis using Linear Mixed-Effects Models (LMM) in R.
- Modeled the temporal dynamics of scan paths using Hidden Markov Models (HMM) implemented in Python.
- Conceptualized research goals, authored manuscripts.

Research Assistant May 2021 – December 2021
Tokyo University of Science
Laboratory: Signal Processing Lab
Supervisor: Aikawa Naoyuki

- Proposed a Composite Hilbert Transformer that integrates a pre-normalized notch filter to suppress noise at specific frequencies.
- Verified significant SNR improvements over conventional Band Pass Hilbert Transformer through extensive simulations in MATLAB.

Professional Experience

Research Engineer April 2024 – December 2025
Hitachi, Ltd., Digital Innovation R&D

- Developed concepts and business use cases
- Defined functional requirements and methodologies
- Authored patent applications
- Applied LLMs in service development
- Established evaluation criteria for LLM verification

Teaching Experience

Sensing and Signal Processing April 2023 – June 2023
Teaching Assistant, The University of Tokyo

- Assisted in building signal processing systems using LabVIEW

Honors and Awards

IEEE CAS JJC Best Student Award 2021

Languages

- High Level in English
- Native in Japanese

References

Haruno Masahiko, Ph.D.,
Professor, National Institute of Information and Communications Technology
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Yamashita Ayumu, Ph.D.,
Assistant Professor, Advanced Telecommunications Research Institute International
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Hachisuka Satori, Ph.D.,
Associate Professor, The University of Tokyo
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