

# Shuhei Watanabe

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## Education

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- Oct 2020 – Oct 2023    **University of Freiburg**, Freiburg, Germany.  
MSc in Computer Science. Supervisor: Prof. Frank Hutter.  
Overall GPA: 1.1/5.0 (1.0 is the best grade).
- Apr 2014 – Mar 2020    **The University of Tokyo**, Tokyo, Japan.  
BSc in Systems Innovation (Sep 2015 ~), Liberal arts (~ Aug 2015).  
Graduated with **the Best GPA** out of 37 students.

## Employment

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- Jun 2024 – Present    **National Institute of Advanced Industrial Science and Technology (AIST)**, Tokyo, Japan. (Part Time Visiting Researcher at Social Intelligence Research (SIR) Team)  
Mentored Chisa Mori & Kaichi Irie (see below for more details).
- Oct 2023 – Present    **Preferred Networks Inc.**, Tokyo, Japan. (Full Time Research Engineer)  
Core Optuna developer. Delivered significant speedup of TPESampler (300x), the default sampler in Optuna, and GPSampler (10x faster than BoTorch). Led GPSampler development. (details).
- Dec 2020 – Sep 2023    **Machine Learning Lab**, Freiburg, Germany.  
Development of Auto-PyTorch, an AutoML tool.
- Sep 2018 – Sep 2020    **AIST**, Tokyo, Japan. (Full Time Technical Staff at SIR Team)  
Co-first authored “Warm Starting CMA-ES for Hyperparameter Optimization” (AAAI’21). Conducted a large-scale experiment on a cluster.

## Awards / Honors

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- Sep 2023    **AutoML 2023 Travel Awards** (500 EURO).
- Aug 2023    **IJCAI-AIJ 2023 Travel and Accessibility Grant Program** (1,000 USD).
- Oct 2022    **NeurIPS 2022 Complimentary Registration** (350 USD).
- Oct 2022    **ELIZA MSc Scholarship** (12,000 EUR, 4 students selected from the University).
- Oct 2022    **Deutschlandstipendium** (3,600 EUR).
- Jul 2022    **1st Prize in AutoML2022: Multiobjective Hyperparameter Optimization for Transformers**
- Sep 2020    **ITO Foundation for International Education Exchange** (48,000 USD, AR: 6.7%).
- Mar 2020    **Hatakeyama Award from the Japan Society of Mechanical Engineers.**  
Awarded for the distinctive grades at the University of Tokyo (AR: 5/340=1.5%).
- May 2019    **PRMU 2018 Yearly Research Encouragement Award.**  
For “*Speed Up of Hyper-Parameter Tuning with Nelder-Mead Method by Parallel Computing*” (AR: 3/170=1.8%). Omitted in “Selected Publications”

## Selected Publications

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See [my website](#) for the full publication list. The total citation count is **1000+** as of October 2025 on Google Scholar. The acceptance rate of IJCAI'23 was about 14%.

1. **S. Watanabe**, F. Hutter (2023). c-TPE: Tree-Structured Parzen Estimator with Inequality Constraints for Expensive Hyperparameter Optimization. International Joint Conference on Artificial Intelligence (IJCAI).
2. **S. Watanabe**, N. Awad, M. Onishi, F. Hutter (2023). Speeding Up Multi-Objective Hyperparameter Optimization by Task Similarity-Based Meta-Learning for the Tree-Structured Parzen Estimator. International Joint Conference on Artificial Intelligence (IJCAI).
3. **S. Watanabe**, A. Bansal, F. Hutter (2023). PED-ANOVA: Efficiently Quantifying Hyperparameter Importance in Arbitrary Subspaces. International Joint Conference on Artificial Intelligence (IJCAI).
4. **S. Watanabe** (2023). Tree-Structured Parzen Estimator: Understanding Its Algorithm Components and Their Roles for Better Empirical Performance. arXiv:2304.11127. (**400+ citations on Google Scholar**)

## Mentoring & Supervision

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Jun 2024 – Present	<b>Chisa Mori</b> , MSc Student, AIST. Theme: Parallel coordinate plots for multi-objective problems.
Jul 2024 – Present	<b>Kaito Baba</b> , MSc Student, Preferred Networks Inc. Theme: Development of constrained optimization for the Gaussian process-based sampler (Single-objective, Multi-objective).
Aug 2025 – Present	<b>Kaichi Irie</b> , MSc Student, Preferred Networks Inc. & AIST. Theme: Development of parallel processing in the Gaussian process-based sampler (Article).

## Miscellaneous

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- **Japanese** (Native Language), **English** (C1, TOEFL iBT: 100), **German** (B2)
- Approx. Top 3.5% (highest) algorithm programmer in **AtCoder** mostly using C++.