Curriculum Vitae – Shuhei Watanabe

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General Information

E-mail	shuhei.watanabe.utokyo@gmail.com
GitHub	https://github.com/nabenabe0928
Homepage	https://nabenabe0928.github.io

Education

Oct 2020 – Oct 2023	**Albert–Ludwigs–Universität Freiburg** - Freiburg, Germany. Master of Computer Science. Supervisor: Prof. Frank Hutter. Overall GPA: 1.1/5.0 (1.0 is the best grade).
Sep 2015 – Mar 2020	**The University of Tokyo** - Tokyo, Japan. Bachelor in Systems Innovation, Faculty of Engineering. Leave the university from Apr 2018 to Sep 2019. Overall GPA: 3.78/4.0 (4.0 is the best grade). Graduated with **the Best GPA** out of 37 students.
Apr 2014 – Aug 2015	**The University of Tokyo** - Tokyo, Japan. Bachelor of College of Arts and Science, Natural Science 1.

Employment

Jun 2024 – Present	**National Institute of Advanced Industrial Science and Technology (AIST)** - Tokyo, Japan. Visiting Researcher (Side Job).
Oct 2023 – Present	**Preferred Networks Inc.** - Tokyo, Japan. Research Engineer as an Optuna Developer. GitHub URL: `https://github.com/optuna/optuna`
Dec 2020 – Oct 2023	**The Machine Learning Lab in Albert–Ludwigs–Universität Freiburg** - Freiburg, Germany. Research Assistant as an Auto-PyTorch Developer. GitHub URL: `https://github.com/automl/Auto-PyTorch`

Sep 2018 – Sep 2020	**National Institute of Advanced Industrial Science and Technology (AIST)** - Tokyo, Japan. Technical Staff (Full-Time) for AutoML Research.
Apr 2018 – Aug 2018	**M3, Inc.** - Tokyo, Japan. Market Researcher and Consultant (Full-Time Internship). Genome Business Consulting.

Awards / Honors

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** (1,000 Euro/month).
Oct 2022	**Deutschlandstipendium** (300 Euro/month).
Jul 2022	**1st Prize in AutoML2022: Multiobjective Hyperparameter Optimization for Transformers**.
Sep 2020	**ITO Foundation for International Education Exchange** (2,000 USD/month for 2 years, AR: 13/193=6.7%).
Mar 2020	**Hatakeyama Award from the Japan Society of Mechanical Engineers**. This award is for the distinctive grades at the mechanical engineering related faculties at the University of Tokyo (AR: 5/340=1.5%). URL: `https://www.jsme.or.jp/archive/award/shou4-19.pdf`
May 2019	**PRMU 2018 Yearly Research Encouragement Award** for the paper *Speed Up of Hyper-Parameter Tuning with Nelder-Mead Method by Parallel Computing*, jointly with Yoshihiko Ozaki, Masaki Onishi. 3 papers were selected out of 170 papers. (AR: 3/170=1.8%). URL: `https://www.ieice.org/~prmu/jpn/award_list.html`
Oct 2014	**1st Prize in the Freshman Team Hokei in the National Intercollegiate Taido Tournament**. Taido is one of the Japanese traditional martial arts.

Publications

I list acceptance rate for prizes or conferences where available as "AR: (papers accepted)/(papers submitted)=(percentage)". ◯ refers to the presenter. ♣ refers to the equally contributed authors.

Theses

1. ◯ **S. Watanabe** (2023). Significant Runtime Reduction for Asynchronous Multi-Fidelity Optimization on Zero-Cost Benchmarks. Master thesis at the University of Freiburg.
2. ◯ **S. Watanabe** (2018). A Study on the Spontaneously Emerged Cooperation in a Collective Game with AI Type Agents. Bachelor thesis at the University of Tokyo.

Referred Journal Publications

1. S. Shigenaka, S. Takami, **S. Watanabe**, Y. Tanigaki, M. Onishi (2024). MAS-Bench: A Benchmarking for Parameter Calibration of Multi-Agent Crowd Simulation. Journal of Computational Social Science.
2. Y. Ozaki, Y. Tanigaki, **S. Watanabe**, M. Nomura, M. Onishi (2022). Multiobjective Tree-Structured Parzen Estimator. Journal of Artificial Intelligence Research (JAIR).

Referred Conference Publications

1. ◯ C. Mori, **S. Watanabe**, M. Onishi, Takayuki Itoh (2025). User Preference-Based Parallel Coordinate Plots: Its Application in Guidance Planning. International Conference on Pedestrian and Evacuation Dynamics (PED).
2. ◯ ♣ C. Mori, ♣ **S. Watanabe**, M. Onishi, Takayuki Itoh (2025). Preference-Optimal Multi-Metric Weighting for Parallel Coordinate Plots. International Conference Information Visualisation (iV).
3. ◯ **S. Watanabe**, N. Mallik, E. Bergman, F. Hutter (2024). Fast Benchmarking of Asynchronous Multi-Fidelity Optimization on Zero-Cost Benchmarks. AutoML Conference.
4. ◯ **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) (AR: 644/4566≃14%).
5. ◯ **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) (AR: 644/4566≃14%).
6. ◯ **S. Watanabe**, A. Bansal, F. Hutter (2023). PED-ANOVA: Efficiently Quantifying Hyperparameter Importance in Arbitrary Subspaces. International Joint Conference on Artificial Intelligence (IJCAI) (AR: 644/4566≃14%).

7. ◯ S. Shigenaka, S. Takami, **S. Watanabe**, Y. Tanigaki, Y. Ozaki, M. Onishi (2021). MAS-Bench: Parameter Optimization Benchmark for Multi-Agent Crowd Simulation. International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS).
8. ◯ ♣ M. Nomura, ♣ **S. Watanabe**, Y. Akimoto, Y. Ozaki, M. Onishi (2021). Warm Starting CMA-ES for Hyperparameter Optimization. AAAI Conference on Artificial Intelligence (AAAI). (AR: 1692/9034=19%).
9. ◯ S. Takenaga, **S. Watanabe**, M. Nomura, Y. Ozaki, M. Onishi, H. Habe (2020). Evaluating Initialization of Nelder–Mead Method for Hyperparameter Optimization in Deep Learning. International Conference on Pattern Recognition (ICPR). Oral Presentation.
10. ◯ Y. Ozaki, Y. Tanigaki, **S. Watanabe**, M. Onishi (2020). Multiobjective Tree-Structured Parzen Estimator for Computationally Expensive Optimization Problems. The Genetic and Evolutionary Computation Conference (GECCO).
11. ◯ **S. Watanabe**, Y. Ozaki, Y. Bando, M. Onishi (2019). Speeding Up of the Nelder–Mead Method by Data–Driven Speculative Execution. Asian Conference on Pattern Recognition (ACPR). Oral Presentation. (AR: 128/273=46%, **Oral presentation: 36/273=13%**)

Referred Workshop Publications

1. ◯ **S. Watanabe** (2023). Python Wrapper for Simulating Multi-Fidelity Optimization on HPO Benchmarks without Any Wait. AutoML Conference Workshop Track.
2. ◯ **S. Watanabe**, N. Awad, M. Onishi, F. Hutter (2022). Multi-Objective Tree-Structured Parzen Estimator Meets Meta-learning. Workshop on Meta-Learning at NeurIPS (MetaLearn).
3. ◯ **S. Watanabe**, F. Hutter (2022). c-TPE: Generalizing Tree-Structured Parzen Estimator with Inequality Constraints for Continuous and Categorical Hyperparameter Optimization. Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-Making Systems at NeurIPS (GPSMDM).
4. ◯ ♣ M Nomura, ♣ **S. Watanabe**, Y. Ozaki, M. Onishi (2019). Warm Starting Method for CMA-ES. Workshop on Meta-Learning at NeurIPS (MetaLearn).
5. ◯ Y. Ozaki, ◯ **S. Watanabe**, M. Onishi (2019). Accelerating the Nelder–Mead Method with Predictive Evaluation. Workshop on Automated Machine Learning at ICML (AutoML).

Preprints

1. K. Abe, Y. Wang, **S. Watanabe** (2025). Tree-Structured Parzen Estimator Can Solve Black-Box Combinatorial Optimization More Efficiently. arXiv:2507.08053.
2. **S. Watanabe** (2025). Derivation of Output Correlation Inferences for Multi-Output (aka Multi-Task) Gaussian Process. arXiv:2501.07964.
3. **S. Watanabe** (2024). Derivation of Closed Form of Expected Improvement for Gaussian Process Trained on Log-Transformed Objective. arXiv:2411.18095.

4. **S. Watanabe** (2023). Python Tool for Visualizing Variability of Pareto Fronts over Multiple Runs. arXiv:2305.08852.
5. **S. Watanabe** (2023). Tree-Structured Parzen Estimator: Understanding Its Algorithm Components and Their Roles for Better Empirical Performance. arXiv:2304.11127.
6. ○ **S. Watanabe**, M. Nomura, M. Onishi (2020). The Characteristics Required in Hyperparameter Optimization of Deep Learning Algorithms. Japanese Society of Artificial Intelligence (JSAI).
7. ○ **S. Watanabe**, Y. Ozaki, M. Onishi (2019). Speed Up of Hyper-Parameter Tuning with Nelder–Mead Method by Parallel Computing. Pattern Recognition and Media Understanding (PRMU). **PRMU 2018 Yearly Research Encouragement Award** (AR: 3/170=1.8%).

Talks

1. ○ **S. Watanabe**, H. Imamura, C. Shinagawa, K. Shinohara, S. Takamoto, J. Li (2024). Multi-Objective Bayesian Optimization for Materials Discovery with Neural Network Potential – An Application to Li-Ion Battery Cathode Material. Materials Research Society Fall Meeting & Exhibit.

Certificates

TOEFL iBT	Total 100 (R: 29, L: 25, S: 22, W: 24) on Jun 2019.
GRE	Q: 168 (Top 7%), V: 152 (Top 46%), W: 4.0 (Top 43%) on Nov 2019.
AtCoder[1]	Highest Rating 1626 (Approx. Top 3.5%)

Language Skills

Japanese	Native Language.
English	CEFR C1.
German	CEFR B2.
French	CEFR A1.

[1] https://atcoder.jp/users/nabenabe0928