

Curriculum Vitae – Shuheï Watanabe

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General Information

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GitHub <https://github.com/nabenabe0928>

Homepage <https://nabenabe0928.github.io>

Education

10.2020 – 10.2023 **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).

09.2015 – 03.2020 **The University of Tokyo** - Tokyo, Japan.
Bachelor in Systems Innovation, Faculty of Engineering.
I was absent from the university from 04.2018 to 08.2019.
Overall GPA: 3.78/4.0 (4.0 is the best grade).
Graduated with **the Best GPA** out of 37 students.

04.2014 – 08.2015 **The University of Tokyo** - Tokyo, Japan.
Bachelor of College of Arts and Science, Natural Science 1.

Employment

10.2023 – **Preferred Networks Inc.** - Tokyo, Japan.
Research Engineer.
Developer of framework named Optuna.
GitHub URL: <https://github.com/optuna/optuna>

12.2020 – Present **The Machine Learning Lab in Albert–Ludwigs–Universität Freiburg** - Freiburg, Germany.
Research Assistant.
Developer of AutoML system named Auto-Pytorch.
GitHub URL: <https://github.com/automl/Auto-PyTorch>

- 09.2018 – 09.2020 **National Institute of Advanced Industrial Science and Technology (AIST)** - Tokyo, Japan.
Technical Staff, full-time job.
Studying AutoML, especially Hyperparameter Optimization.
- 04.2018 – 08.2018 **M3, Inc.** - Tokyo, Japan.
Market Researcher and Consultant, full-time job(internship).
Consulting the methods to lay out the genome business.

Awards / Honors

- 09.2023 **AutoML 2023 Travel Awards** (500 EURO)
- 10.2022 **NeurIPS 2022 Complimentary Registration** (350 USD)
- 10.2022 **ELIZA MSc Scholarship** (1,000 Euro/month)
- 10.2022 **Deutschlandstipendium** (300 Euro/month)
- 07.2022 **1st Prize in AutoML2022: Multiobjective Hyperparameter Optimization for Transformers**
- 09.2020 **ITO Foundation for International Education Exchange**
(2,000 USD/month for 2 years, AR: 13/193=6.7%).
- 03.2020 **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>
- 05.2019 **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
- 10.2014 **1st Prize in the Freshman Team Hokei in the National Intercollegiate Taïdo Tournament.** Taïdo 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**. Significant Runtime Reduction for Asynchronous Multi-Fidelity Optimization on Zero-Cost Benchmarks. Master thesis at the University of Freiburg, 2023.
2. ○ **S. Watanabe**. A Study on the Spontaneously Emerged Cooperation in a Collective Game with AI Type Agents. Bachelor thesis at the University of Tokyo, 2018.

Referred Journal Publications

1. ○ Y. Ozaki, Y. Tanigaki, **S. Watanabe**, M. Nomura, M. Onishi. Multiobjective Tree-Structured Parzen Estimator. Journal of Artificial Intelligence Research 2022 (JAIR2022).

Referred Conference Publications

1. ○ **S. Watanabe**, F. Hutter. c-TPE: Tree-Structured Parzen Estimator with Inequality Constraints for Expensive Hyperparameter Optimization. International Joint Conference on Artificial Intelligence 2023 (IJCAI2023) (AR: 644/4566≈14%).
2. ○ **S. Watanabe**, N. Awad, M. Onishi, F. Hutter. Speeding Up Multi-Objective Hyperparameter Optimization by Task Similarity-Based Meta-Learning for the Tree-Structured Parzen Estimator. International Joint Conference on Artificial Intelligence 2023 (IJCAI2023) (AR: 644/4566≈14%).
3. ○ **S. Watanabe**, A. Bansal, F. Hutter. PED-ANOVA: Efficiently Quantifying Hyperparameter Importance in Arbitrary Subspaces. International Joint Conference on Artificial Intelligence 2023 (IJCAI2023) (AR: 644/4566≈14%).
4. ○ S. Shigenaka, S. Takami, **S. Watanabe**, Y. Tanigaki, Y. Ozaki, M. Onishi. MAS-Bench: Parameter Optimization Benchmark for Multi-Agent Crowd Simulation. International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS2021).
5. ○ ♣ M. Nomura, ♣ **S. Watanabe**, Y. Akimoto, Y. Ozaki, M. Onishi. Warm Starting CMA-ES for Hyperparameter Optimization. AAAI Conference on Artificial Intelligence (AAAI2021). (AR: 1692/9034=19%).
6. ○ S. Takenaga, **S. Watanabe**, M. Nomura, Y. Ozaki, M. Onishi, H. Habe. Evaluating Initialization of Nelder–Mead Method for Hyperparameter Optimization in Deep Learning. International Conference on Pattern Recognition (ICPR2020). Oral Presentation.

7. ○ Y. Ozaki, Y. Tanigaki, **S. Watanabe**, M. Onishi. Multiobjective Tree-Structured Parzen Estimator for Computationally Expensive Optimization Problems. The Genetic and Evolutionary Computation Conference (GECCO2020).
8. ○ **S. Watanabe**, Y. Ozaki, Y. Bando, M. Onishi. Speeding Up of the Nelder–Mead Method by Data–Driven Speculative Execution. Asian Conference on Pattern Recognition (ACPR2019). Oral Presentation. (AR: 128/273=46%, **Oral presentation: 36/273=13%**)

Referred Workshop Publications

1. ○ **S. Watanabe**. Python Wrapper for Simulating Multi-Fidelity Optimization on HPO Benchmarks without Any Wait. AutoML 2023 Workshop Track.
2. ○ **S. Watanabe**, N. Awad, M. Onishi, F. Hutter. Multi-Objective Tree-Structured Parzen Estimator Meets Meta-learning. Workshop on Meta-Learning at NIPS 2022 (MetaLearn2022).
3. ○ **S. Watanabe**, F. Hutter. 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 NIPS 2022 (GPSMDM2022).
4. ○ ♣ M Nomura, ♣ **S. Watanabe**, Y. Ozaki, M. Onishi. Warm Starting Method for CMA-ES. Workshop on Meta-Learning at NIPS 2019 (MetaLearn2019).
5. ○ Y. Ozaki, ○ **S. Watanabe**, M. Onishi. Accelerating the Nelder–Mead Method with Predictive Evaluation. Workshop on Automated Machine Learning at ICML 2019 (AutoML2019).

Preprint

1. ○ **S. Watanabe**. Python Tool for Visualizing Variability of Pareto Fronts over Multiple Runs. arXiv:2305.08852 (2023).
2. ○ **S. Watanabe**. Tree-Structured Parzen Estimator: Understanding Its Algorithm Components and Their Roles for Better Empirical Performance. arXiv:2304.11127 (2023).
3. ○ **S. Watanabe**, M. Nomura, M. Onishi. The Characteristics Required in Hyperparameter Optimization of Deep Learning Algorithms (JSAI2020).
4. ○ **S. Watanabe**, Y. Ozaki, M. Onishi. Speed Up of Hyper-Parameter Tuning with Nelder–Mead Method by Parallel Computing. Pattern Recognition and Media Understanding (PRMU2019). **PRMU 2018 Yearly Research Encouragement Award** (AR: 3/170=1.8%).

Certificates

TOEFL iBT Total 100 (R: 29, L: 25, S: 22, W: 24).

GRE Q: 168 (93%), V: 152 (54%), W: 4.0 (57%).

AtCoder¹ Highest Rating 1626 (Approx. Top 3.5%)

Language Skills

Japanese Native Language.

English CEFR C1.

German CEFR B2.

French CEFR A2.

¹ <https://atcoder.jp/users/nabenabe0928>