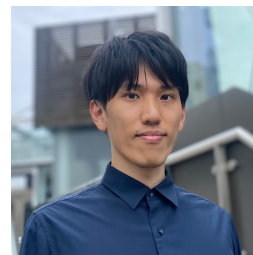


# 宮口航平 (Kohei MIYAGUCHI), Ph.D.

✉ koheimiyaguchi@gmail.com

in koheim

🌐 <https://koheimiya.github.io/>



## Highlights

Published and presented a number of research papers at top-tier international conferences of machine learning (ML) and artificial intelligence (AI). Led or played key roles in various projects of ML/AI applications through developing AI-based products and engaging in collaborative research with clients. Experience in mentoring interns and students. Specialized in the learning theory and the reinforcement learning.

## Employment History

2019 – NOW    📌 **Staff Research Scientist**, IBM Research – Tokyo.











## Education

- 2016 – 2019    📌 **Ph.D., The University of Tokyo**, Grad. School of Information Science and Technology.  
Thesis: *Learning High-dimensional Models with the Minimum Description Length Principle*.
- 2014 – 2016    📌 **Data Scientist, The University of Tokyo**, Data Science School.
- 2014 – 2016    📌 **M.Sc. Eng., The University of Tokyo**, Grad. School of Information Science and Technology.  
Thesis: *Study on Learning from Nonstationary Time Series*.
- 2012 – 2014    📌 **B.Sc. Eng., The University of Tokyo**, Dept. of Mathematical Engineering and Information Physics.

## Research Publications

### Conference Proceedings (Peer Reviewed)

- 1 H. Kajino, **K. Miyaguchi**, and T. Osogami, “Biases in evaluation of molecular optimization methods and bias reduction strategies,” in *International Conference on Machine Learning, ICML 2023, 23-29 July 2023, Honolulu, Hawaii, USA*, A. Krause, E. Brunskill, K. Cho, B. Engelhardt, S. Sabato, and J. Scarlett, Eds., ser. Proceedings of Machine Learning Research, vol. 202, PMLR, 2023, pp. 15 567–15 585. 🌐 URL: <https://proceedings.mlr.press/v202/kajino23a.html>.
- 2 T. Katsuki, **K. Miyaguchi**, A. Koseki, T. Iwamori, R. Yanagiya, and A. Suzuki, “Cumulative stay-time representation for electronic health records in medical event time prediction,” in *Proceedings of the Thirty-First International Joint Conference on Artificial Intelligence, IJCAI 2022, Vienna, Austria, 23-29 July 2022*, L. D. Raedt, Ed., ijcai.org, 2022, pp. 3861–3867. 🌐 DOI: 10.24963/IJCAI.2022/536.
- 3 M. Kobayashi, **K. Miyaguchi**, and S. Matsushima, “Detection of unobserved common cause in discrete data based on the MDL principle,” in *IEEE International Conference on Big Data, Big Data 2022, Osaka, Japan, December 17-20, 2022*, S. Tsumoto, Y. Ohsawa, L. Chen, et al., Eds., IEEE, 2022, pp. 45–54. 🌐 DOI: 10.1109/BIGDATA55660.2022.10020351.
- 4 **K. Miyaguchi**, “A theoretical framework of almost hyperparameter-free hyperparameter selection methods for offline policy evaluation,” in *Workshop on AI for Decision Optimization, The Thirty-Sixth AAAI Conference on Artificial Intelligence, AAAI 2022, Vancouver, BC, Canada, February 28 - March 1, 2022*, vol. abs/2201.02300, 2022. arXiv: 2201.02300. 🌐 URL: <https://research.ibm.com/haifa/Workshops/AAAI-22-AI4DO/>.

- 5 **K. Miyaguchi**, T. Katsuki, A. Koseki, and T. Iwamori, "Variational inference for discriminative learning with generative modeling of feature incompleteness," in *The Tenth International Conference on Learning Representations, ICLR 2022, Virtual Event, April 25-29, 2022*, OpenReview.net, 2022.  URL: <https://openreview.net/forum?id=qnQN4yr6FJz>.
- 6 H. Yanagisawa, **K. Miyaguchi**, and T. Katsuki, "Hierarchical lattice layer for partially monotone neural networks," in *Advances in Neural Information Processing Systems 35: Annual Conference on Neural Information Processing Systems 2022, NeurIPS 2022, New Orleans, LA, USA, November 28 - December 9, 2022*, S. Koyejo, S. Mohamed, A. Agarwal, D. Belgrave, K. Cho, and A. Oh, Eds., 2022.  URL: [http://papers.nips.cc/paper%5C\\_files/paper/2022/hash/47ed62021460f2e9bba7be3e74260090-Abstract-Conference.html](http://papers.nips.cc/paper%5C_files/paper/2022/hash/47ed62021460f2e9bba7be3e74260090-Abstract-Conference.html).
- 7 **K. Miyaguchi**, "Asymptotically exact error characterization of offline policy evaluation with misspecified linear models," in *Advances in Neural Information Processing Systems 34: Annual Conference on Neural Information Processing Systems 2021, NeurIPS 2021, December 6-14, 2021, virtual*, M. Ranzato, A. Beygelzimer, Y. N. Dauphin, P. Liang, and J. W. Vaughan, Eds., 2021, pp. 28 573–28 584.  URL: <https://proceedings.neurips.cc/paper/2021/hash/f0282b5ff85e7c9c66200d780bd7e72e-Abstract.html>.
- 8 **K. Miyaguchi** and H. Kajino, "Cogra: Concept-drift-aware stochastic gradient descent for time-series forecasting," in *The Thirty-Third AAAI Conference on Artificial Intelligence, AAAI 2019, The Thirty-First Innovative Applications of Artificial Intelligence Conference, IAAI 2019, The Ninth AAAI Symposium on Educational Advances in Artificial Intelligence, EAAI 2019, Honolulu, Hawaii, USA, January 27 - February 1, 2019*, AAAI Press, 2019, pp. 4594–4601.  DOI: 10.1609/AAAI.V33I01.33014594.
- 9 **K. Miyaguchi** and K. Yamanishi, "Adaptive minimax regret against smooth logarithmic losses over high-dimensional li-balls via envelope complexity," in *The 22nd International Conference on Artificial Intelligence and Statistics, AISTATS 2019, 16-18 April 2019, Naha, Okinawa, Japan*, K. Chaudhuri and M. Sugiyama, Eds., ser. Proceedings of Machine Learning Research, vol. 89, PMLR, 2019, pp. 3440–3448.  URL: <http://proceedings.mlr.press/v89/miyaguchi19a.html>.
- 10 R. Kaneko, **K. Miyaguchi**, and K. Yamanishi, "Detecting changes in streaming data with information-theoretic windowing," in *2017 IEEE International Conference on Big Data (IEEE BigData 2017), Boston, MA, USA, December 11-14, 2017*, J. Nie, Z. Obradovic, T. Suzumura, et al., Eds., IEEE Computer Society, 2017, pp. 646–655.  DOI: 10.1109/BIGDATA.2017.8257980.
- 11 **K. Miyaguchi**, S. Matsushima, and K. Yamanishi, "Sparse graphical modeling via stochastic complexity," in *Proceedings of the 2017 SIAM International Conference on Data Mining, Houston, Texas, USA, April 27-29, 2017*, N. V. Chawla and W. Wang, Eds., SIAM, 2017, pp. 723–731.  DOI: 10.1137/1.9781611974973.81.
- 12 A. Suzuki, **K. Miyaguchi**, and K. Yamanishi, "Structure selection for convolutive non-negative matrix factorization using normalized maximum likelihood coding," in *IEEE 16th International Conference on Data Mining, ICDM 2016, December 12-15, 2016, Barcelona, Spain*, F. Bonchi, J. Domingo-Ferrer, R. Baeza-Yates, Z. Zhou, and X. Wu, Eds., IEEE Computer Society, 2016, pp. 1221–1226.  DOI: 10.1109/ICDM.2016.0163.
- 13 K. Yamanishi and **K. Miyaguchi**, "Detecting gradual changes from data stream using mdl-change statistics," in *2016 IEEE International Conference on Big Data (IEEE BigData 2016), Washington DC, USA, December 5-8, 2016*, J. Joshi, G. Karypis, L. Liu, et al., Eds., IEEE Computer Society, 2016, pp. 156–163.  DOI: 10.1109/BIGDATA.2016.7840601.
- 14 **K. Miyaguchi** and K. Yamanishi, "On-line detection of continuous changes in stochastic processes," in *2015 IEEE International Conference on Data Science and Advanced Analytics, DSAA 2015, Campus des Cordeliers, Paris, France, October 19-21, 2015*, IEEE, 2015, pp. 1–9.  DOI: 10.1109/DSAA.2015.7344783.

## Journal Articles (Peer Reviewed)

- 1 **K. Miyaguchi** and K. Yamanishi, “High-dimensional penalty selection via minimum description length principle,” *Mach. Learn.*, vol. 107, no. 8-10, pp. 1283–1302, 2018. [DOI: 10.1007/S10994-018-5732-2](#).
- 2 **K. Miyaguchi** and K. Yamanishi, “Online detection of continuous changes in stochastic processes,” *Int. J. Data Sci. Anal.*, vol. 3, no. 3, pp. 213–229, 2017. [DOI: 10.1007/S41060-017-0045-2](#).

## Books and Chapters

- 1 H. Kajino, **K. Miyaguchi**, T. Osogami, R. Iwaki, and A. Wachi, *From reinforcement learning to reliable decision making (Japanese)*, K. Yamanishi, Ed. Saiensu-sha, 2024.

## Experience

### Invited Talk

- 2022 **Introduction to Statistical Learning Theory from Generalization Error Analysis**  
The 25th Information-Based Induction Sciences (IBIS) Workshop, Tutorial.
- NeurIPS2021 Review on Deep Learning Theories**, The 83rd JSAI Seminar.
- 2020 **PAC-Bayesian Transportation Bound**, RIKEN AIP Mathematical Seminar.

### Awards and Achievements

- 2019 **Best Presentation Award**, The 23rd Information-Based Induction Sciences (IBIS) Workshop.
- 2018 **Student Award**, The fifth conference of The Japanese Society for Artificial Intelligence (JSAI).

### Fellowship

- 2017 **Research Fellowship for Young Scientist (DC2)**, Japan Society for the Promotion of Science (JSPS).
- 2016 **Research Assistant**, Grad. School of Information Science and Technology, The University of Tokyo.

### Academic Service

- 2024 – NOW **Program Committee Member**, The Information-Based Induction Sciences and Machine Learning (IBISML).
- 2019 – 2020 **Program Committee Member**, JSAI.

## Skills

- Languages **English** (business level), **Japanese** (native).
- Coding **Python**, **C/C++**, **LaTeX**,

## References

Available on Request