

AKIFUMI OKUNO

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I am an assistant professor at the school of statistical thinking, the institute of statistical mathematics, Tokyo, Japan. I am also a visiting scientist of RIKEN center for Advanced Intelligence Project (AIP). I received a Doctor of Informatics degree from Kyoto University.

PUBLICATIONS

Journal paper (refereed)

4. [Akifumi Okuno](#) and Keisuke Yano. “A generalization gap estimation for overparameterized models via the Langevin functional variance.” accepted to **Journal of Computational and Graphical Statistics**.
▷ <https://doi.org/10.1080/10618600.2023.2197488>
3. Kohei Hattori, [Akifumi Okuno](#) and Ian U. Roederer. “Finding r -II sibling stars in the Milky Way with the Greedy Optimistic Clustering algorithm.” **Astrophysical Journal**, 946:48, 2023.
▷ <https://doi.org/10.3847/1538-4357/acb93b>
2. [Akifumi Okuno](#) and Keisuke Yano. “Dependence of variance on covariate design in nonparametric link regression.” **Statistics and Probability Letters**, 193:109716, 2023.
▷ <https://doi.org/10.1016/j.spl.2022.109716>
1. [Akifumi Okuno](#) and Hidetoshi Shimodaira. “Hyperlink Regression via Bregman Divergence.” **Neural Networks**, 126:362-383, 2020.
▷ <https://doi.org/10.1016/j.neunet.2020.03.026>

Conference papers (refereed)

6. [Akifumi Okuno](#) and Hidetoshi Shimodaira. “Extrapolation Towards Imaginary 0-Nearest Neighbour and Its Improved Convergence Rate.” Advances in Neural Information Processing Systems (**NeurIPS**) 2020. pages 21889-21899.
▷ <https://papers.nips.cc/paper/2020/hash/f9028faec74be6ec9b852b0a542e2f39-Abstract.html>
5. Geewook Kim, [Akifumi Okuno](#), Kazuki Fukui, and Hidetoshi Shimodaira. “Representation Learning with Weighted Inner Product for Universal Approximation of General Similarities.” International Joint Conference on Artificial Intelligence (**IJCAI**) 2019.
▷ <https://www.ijcai.org/proceedings/2019/699>
4. [Akifumi Okuno](#) and Hidetoshi Shimodaira. “Robust Graph Embedding with Noisy Link Weights.” International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2019. PMLR 89:664-673.
▷ <http://proceedings.mlr.press/v89/okuno19b.html>
3. [Akifumi Okuno](#), Geewook Kim, and Hidetoshi Shimodaira. “Graph Embedding with Shifted Inner Product Similarity and Its Improved Approximation Capability.” International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2019. PMLR 89:644-653.
▷ <http://proceedings.mlr.press/v89/okuno19a.html>
2. [Akifumi Okuno](#), Tetsuya Hada, and Hidetoshi Shimodaira. “A probabilistic framework for multi-view feature learning with many-to-many associations via neural networks.” International Conference on Machine Learning (**ICML**) 2018. PMLR 80:3888-3897.
▷ <http://proceedings.mlr.press/v80/okuno18a.html>
1. Kazuki Fukui, [Akifumi Okuno](#), and Hidetoshi Shimodaira. “Image and tag retrieval by leveraging image-group links with multi-domain graph embedding.” International Conference on Image Pro-

cessing (ICIP) 2016.

▷ <http://ieeexplore.ieee.org/document/7532351/>

Workshop paper (refereed)

1. Akifumi Okuno and Hidetoshi Shimodaira. “On representation power of neural network-based graph embedding and beyond.” ICML 2018 TADGM Workshop. 8 pages + Supplement. (Okuno et al., (AISTATS2019) is based on this workshop paper)
▷ <https://sites.google.com/view/tadgm/accepted-papers>

Non-peer-reviewed papers in Japanese are excluded in the above publication list.

INVITED TALKS

4. Akifumi Okuno. A generalization gap estimation for overparameterized models via the Langevin functional variance (in Japanese, Oral), at *StatsML Symposium'21*, Online, Japan. Feb., 2022.
3. Akifumi Okuno. Bregman Hyperlink Regression and Its Expressive Power (in English, Oral), at *ACML 2019 Workshop on Statistics and Machine Learning Researchers in Japan*, Nagoya, Japan. Nov., 2019.
2. Akifumi Okuno. Graph Embedding with Shifted Inner Product Similarity and Its Improved Approximation Capability (in English, Oral), at *the Workshop on Functional Inference and Machine Intelligence*, Tokyo, Japan. Mar., 2019.
1. Akifumi Okuno. A probabilistic model for graph embedding and its properties (in Japanese, Oral), at *RIMS Workshop*, Kyoto, Japan. Nov., 2018.

Other presentations are listed in <https://okuno.net/>

EDUCATION

Kyoto University

Doctor of Informatics, from the Graduate School of Informatics

September 2020

Supervisor: Prof. Hidetoshi SHIMODAIRA

Thesis: “Studies on Neural Network-Based Graph Embedding and Its Extensions”

Osaka University

Master of Engineering, from the Graduate School of Engineering Science

March 2016

Supervisor: Prof. Hidetoshi SHIMODAIRA

Thesis: “Iteratively Reweighted-Graph Embedding”

graduated at the top of the list of the division of mathematical science

Osaka University

Bachelor of Engineering, in Mathematical Science, Engineering Science Department

March 2014

Supervisor: Prof. Hidetoshi SHIMODAIRA

Thesis: “Robust information criterion and its application”

graduated at the top of the list of mathematical science course

GRANT

Grant-in-Aid for Young Scientists (Repr., Apr. 2021 - Mar. 2025) KAKENHI 21K17718

Grant-in-Aid for JSPS Fellow (DC2) (Repr., Apr. 2017 - Mar. 2019) KAKENHI 17J03623

LANGUAGE

Japanese Native

English Intermediate

OVERSEAS EXPERIENCE

UC Berkeley, California, USA

October 2016 - November 2016

Research visiting at Prof. Bin Yu's Lab. (as a visitor)

The stay was funded by the Center for Mathematical Modeling and Data Science, Osaka University

Ohio State University, Ohio, USA

February 2016 - May 2016

Research visiting at Prof. Mikhail Belkin's Lab. (as a visitor)

The stay was funded by the Center for Mathematical Modeling and Data Science, Osaka University

WORKING EXPERIENCE

The Graduate Institute for Advanced Studies (SOKENDAI)

Oct. 2022 - (Present)

Assistant Professor

The Institute of Statistical Mathematics

Oct. 2020 - (Present)

Assistant Professor of the School of Statistical Thinking

RIKEN Center for Advanced Intelligence Project (AIP)

Feb. 2017 - (Present)

as a Part-timer: Feb. 2017 - Mar. 2017 and Apr. 2018 - Mar. 2019

as a Trainee: May 2017 - Mar. 2018

as a Technical Staff I: Apr. 2019 - Sep. 2020

as a Visiting Scientist: Oct. 2020 - (Present)

working at Mathematical Statistics team (PI: Prof. Hidetoshi SHIMODAIRA)

Japan Society for the Promotion of Science (JSPS)

Apr. 2017 - Mar. 2019

Research Fellow (DC2)

Graduate School of Engineering Science, Osaka University

Aug. 2016 - Feb. 2017

Σ -Research Assistant

Osaka University Library

Apr. 2014 - Feb. 2017

Library Teaching Assistant of Statistics and Mathematics

Osaka University

Oct. 2015 - Feb. 2016

Tutor of a Taiwanese short-term exchange student

Engineering Science Department, Osaka University

Apr. 2014 - Aug. 2015

Teaching Assistant

Apr. 2015 - Aug. 2015: Problem Based Learning (Prof. Kei HIROSE), Oct. 2014 - Feb. 2015: Statistics B-II (Prof. Fuyuhiko TANAKA), Apr. 2014 - Aug. 2014: Complex Analysis (Prof. Fuyuhiko TANAKA).

AWARDS

Excellent Presentation Award from IBISML2019

Nov. 2019

Excellent Research Award from ICT-13 (held in Kyoto U.)

Feb. 2019

Excellent Presentation Award from JAPAN STATISTICAL SOCIETY

Mar. 2017

Full Repayment Exemption of JASSO Type I scholarship for Students with Excellent Grades from JAPAN STUDENT SERVICES ORGANIZATION (JASSO)

May 2016

Graduate School of Engineering Science Award from OSAKA UNIVERSITY

Mar. 2016

Engineering Science Department Award from OSAKA UNIVERSITY

Mar. 2014

Kimura Award from RITSUMEIKAN ACADEMY

Mar. 2010