Naoki Sato

MASTER'S CANDIDATE IN COMPUTER SCIENCE

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Education

Meiji University   *Kanagawa, Japan*
PH.D. CANDIDATE IN COMPUTER SCIENCE   *Apr. 2025 -*
- Topic: Optimization in Deep Neural Networks
- Supervisor: Prof. Hideaki Iiduka

Meiji University   *Kanagawa, Japan*
M.S. IN COMPUTER SCIENCE   *Apr. 2023 - Mar. 2025*
- Thesis: Implicit Graduated Optimization with Noise in Stochastic Gradient Descent
- Supervisor: Prof. Hideaki Iiduka

Meiji University   *Kanagawa, Japan*
B.S. IN COMPUTER SCIENCE   *Apr. 2019 - Mar. 2023*
- Thesis: Using Constant Learning Rate of Two Time-Scale Update Rule for Training Generative Adversarial Networks
- Supervisor: Prof. Hideaki Iiduka

Reseach Interests

Optimization for Deep Learning

Publication

INTERNATIONAL CONFERENCE

Explicit and Implicit Graduated Optimization in Deep Neural Networks   *Philadelphia, Pennsylvania, USA*
Naoki Sato, Hideaki Iiduka   *Feb. 27, 2025*
The 39th Annual AAAI Conference on Artificial Intelligence **(AAAI-25)**

Theoretical Analysis of Two Time-Scale Update Rule for Training GANs   *Waseda University, Tokyo, Japan*
Naoki Sato, Hideaki Iiduka   *Aug. 23, 2023*
The 10th International Congress on Industrial and Applied Mathematics **(ICIAM2023)**

Existence and Estimation of Critical Batch Size for Training Generative Adversarial Networks with Two Time-Scale Update Rule   *Honolulu, Hawaii, USA*
Naoki Sato, Hideaki Iiduka   *Jul. 24, 2023*
The 40th International Conference on Machine Learning **(ICML2023)**

JOURNAL

Scaled Conjugate Gradient Method for Nonconvex Optimization in Deep Neural Networks
Naoki Sato, Hideaki Iiduka   *Dec. 13, 2024*
Journal of Machine Learning Research **(JMLR)**

DOMESTIC CONFERENCE (JAPAN)

Stochastic Frank Wolfe method for Constrained Nonconvex Optimization and its Application for Adversarial Attack   *Seikei University, Tokyo, Japan*
Naoki Sato, Hideaki Iiduka   *Mar. 6, 2025*
The 2025 Spring National Conference of Operations Research Society of Japan

Global Optimization for Empirical Risk Function by Graduated Optimization with Stochastic Noise in SGD   *Hokkaido University, Hokkaido, Japan*
Naoki Sato, Hideaki Iiduka   *Dec. 21, 2024*
The 55th Information-Based Induction Sciences and Machine Learning **(IBISML)**

Global Optimization for Empirical Risk Minimization Problems using a Graduated Optimization Algorithm with the Smoothing Effect of Stochastic Gradient Descent

SONIC CITY HALL, Saitama, Japan

Naoki Sato, Hideaki Iiduka

Nov. 5, 2024

The 27th Information-Based Induction Sciences Workshop **(IBIS2024)**

Role of Momentum in Smoothing Objective Function and Generalizability of Deep Neural Networks

Nanzan University, Aichi, Japan

Naoki Sato, Hideaki Iiduka

Sept. 11, 2024

The 2024 Fall National Conference of Operations Research Society of Japan

Global Optimization of Deep Neural Networks for Graduated Optimization Method using Smoothing Effect of Stochastic Gradient Descent

University of Tsukuba, Ibaraki, Japan

Naoki Sato, Hideaki Iiduka   **[Student Excellent Presentation Award]**

Mar. 7, 2024

The 2024 Spring National Conference of Operations Research Society of Japan

Existence and Estimation of Critical Batch Size for Training GANs with Two Time-Scale Update Rule

Kyoto University, Kyoto, Japan

Naoki Sato, Hideaki Iiduka

Aug. 28, 2023

RIMS Workshop on Mathematical Optimization: Theory and Practice, Research Institute for Mathematical Sciences