

NONTAWAT CHAROENPHAKDEE

Researcher at Preferred Networks

✉ nontawat@preferred.jp

🏠 <https://nolfwin.github.io/>

🌐 <https://github.com/nolfwin>

Education

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| Ph.D. of Computer Science , The University of Tokyo | | Sep 2018 - Sep 2021 |
| Supervisor | Masashi Sugiyama | |
| Laboratory website | http://www.ms.k.u-tokyo.ac.jp/ | |
| Thesis | Theory and Algorithms of Machine Learning with Rejection Based on Loss Function Perspective | |
| GPAX | 4.00 / 4.00 | |
| Master of Information Science and Technology , The University of Tokyo | | Sep 2016 - Sep 2018 |
| Supervisor | Masashi Sugiyama | |
| Thesis | Machine Learning from Noisy Labels: An Approach Based on Symmetric Losses | |
| GPAX | 4.00 / 4.00 | |
| Bachelor of Computer Engineering , Chulalongkorn University | | Jun 2011 - Jun 2015 |
| Thesis | Mobile Application for Automatic Popular Music Composition from Singing Voice | |
| GPAX | 3.80 / 4.00 (First class honors) | |

Research Interest: Machine Learning

Loss function, Evaluation metric, Learning with reject option, Weakly supervised learning, Domain adaptation, Anomaly detection, Applications (e.g., speech signal processing, healthcare data analysis, molecular property prediction, neural network potentials, natural language processing)

Job Experience

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| Researcher, Preferred Networks , (Tokyo, Japan) | Oct 2021 - Present |
| <ul style="list-style-type: none">Working on Machine Learning for applications in healthcare and quantum chemistry domains. | |
| Part-time researcher, RIKEN Center for Advanced Intelligence Project , (Tokyo, Japan) | Jan 2019 - Sep 2021 |
| <ul style="list-style-type: none">Researched on weakly supervised learning in the imperfect information learning team. | |
| Part-time Software Developer, HENNGE , (Tokyo, Japan) | Jun 2016 - Dec 2018 |
| <ul style="list-style-type: none">Researched and developed a machine learning system for solving the bipartite ranking task.Optimized the memory/time complexity for searching in mail archiving system. | |
| Software Developer, CODIUM Company Limited , (Bangkok, Thailand) | Feb 2015 - Feb 2016 |
| <ul style="list-style-type: none">Developed a web application for customer relationship management using django web framework.Developed a cloud monitoring system using Tornado, RethinkDB and django. | |

Internship Experience

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| Research Intern, Preferred Networks , (Tokyo, Japan) | Aug 2019 - Sep 2019 |
| <ul style="list-style-type: none">Research topic: Open-set few-shot speaker identification from speech signal dataResearch blog: https://tech.preferred.jp/en/blog/open-set-few-shot-speaker-identification/ | |
| Research Intern, Computer Science, Chulalongkorn University , (Bangkok, Thailand) | Feb 2019 - Mar 2019 |
| <ul style="list-style-type: none">Research topic: Learning only from relevant keywords and unlabeled documents.Result: A conference paper published in EMNLP-IJCNLP 2019. | |
| Research Intern, R&D Team of NTT Data Corporation , (Tokyo, Japan) | Jan 2015 - Feb 2015 |
| <ul style="list-style-type: none">Developed and tested a telepresence iOS application using telerobotics technology.Attended workshop on big data innovation and demand-side management at Keio University | |
| iOS Developer, CODIUM Company Limited , (Bangkok, Thailand) | Jul 2014 - Sep 2014 |

- Developed an iPad enterprise application for the Japanese car maintenance company using Objective-C and conducted requirement gathering and analysis.

Research Student, JAIST, (Ishikawa, Japan)

Mar 2014 - May 2014

- Researched on fundamental frequency estimation of reverberant speech using multivariate empirical mode decomposition (MEMD) and autocorrelation of the log spectrum (ACLOS) under supervision of Professor Masashi Unoki

Skill

Programming languages (most to least proficient):
Tools & Frameworks:

Python, MATLAB, Java, C++
 Amazon AWS, PostgreSQL, MongoDB, Chainer, PyTorch, django

Professional Activity

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| Journal Reviewer: | Machine Learning, Neural Networks, Springer Nature Computer Science, Expert Systems with Applications, IEICE Transactions on Information and Systems, ACM Transactions on Knowledge Discovery from Data |
| Conference Reviewer: | ICLR 2020, ICML 2020 (Top 33%), ACML 2020, NeurIPS 2020 (Top 10%), CVPR 2021 (Outstanding), ICML 2021 Expert Reviewer (Top 10%), ACML 2021, NeurIPS 2021 (Outstanding: Top 8%), ICML 2022, FAccT 2022, NeurIPS 2022 (Outstanding), ICML 2023 |
| Workshop Reviewer: | IJCAI WSRL 2021 |
| Student Volunteer: | ACML 2020 |

Award and Honor

- **Dean's Award for Outstanding Research Achievement:** One graduate was selected to receive this award among all Ph.D. graduates (in Sep. 2021 and Mar. 2022) in the department of computer science, the University of Tokyo. The decision was based on academic achievements and the doctor's thesis. Link: https://www.i.u-tokyo.ac.jp/news/topics/2022/202203291996_e.shtml
- **Google PhD Fellowship Recipient 2020 in Machine learning:** A fellowship program provided by Google to recognize and support outstanding graduate students doing research in areas relevant to computer science and related fields. Link: <https://research.google/outreach/phd-fellowship/recipients/>.
- **Selected as a participant of the Global Young Scientists Summit 2020:** GYSS is an international gathering of young researchers from all over the world in Singapore, who will be mentored by Nobel Laureates, Fields Medalists, Millennium Technology Prize winners, and Turing Award winners over a four-day summit. I also gave a poster presentation of my master's thesis "Machine learning from Noisy Labels: An Approach Based on Symmetric Losses".
- **AIP Challenge Program:** Awarded a research funding for young researchers provided by Japan Science and Technology Agency (JST): 1,000,000 JPY.
- **Top 1% in Shopee Code League Competition on Product Detection:** Ranked 4/646 in product category classification challenge. Data are images in Shopee.com (the leading online shopping platform in Southeast Asia) which may also contain texts in ASEAN languages. Teamed up with Nuttapong Chairatanakul, Pannavat Terdchanakul, and Zhenghang Cui. Competition Link: <https://www.kaggle.com/c/shopee-product-detection-open/leaderboard>.
- **Winner of Thailand NLP Hackathon 2/2020:** Ranked first place in Thailand online hackathon 2/2020 for the natural language processing task. Teamed up with Noppayut Sriwatanasakdi and Nuttapong Chairatanakul. This competition was organized by the Artificial Intelligence Association of Thailand (AIAT). Prize: 20,000 THB. Link: <https://bit.ly/3t2NcLn>. Also featured in Ep. 14 of the program "AI Lives" by AIAT (in Thai language): <https://bit.ly/209y0Nx>.
- **Representative Student:** One graduate was selected as a representative student from all master's graduates in the faculty of information science and technology (IST), the University of Tokyo, in September 2018. The decision was based on academic achievements and the master's thesis. Awarded free academic gown rental and an honor to be the representative student of IST to receive my master's degree certificate directly from the president of the University of Tokyo, Makoto Gonokami.
- **Monbukagakusho (MEXT) Scholarship:** A scholarship granted by the Japanese government for studying both master's and doctor's degrees at the University of Tokyo. The scholarship covers flight tickets, tuition fees, and monthly allowance.
- **Featured in Ep. 3 of Thai in AI (ThAI):** It was my honor to be interviewed by Krikamol Muandet in ThAI, which is a program aims at connecting Thai scholars working in artificial intelligence (AI) across the globe with the purpose of creating, strengthening, and maintaining international collaboration among them as well as cultivating a new generation of Thai scholars. Youtube (in Thai language): <https://www.youtube.com/watch?v=zMKZSCi6kKg>
- **NeurIPS 2019 Travel Award:** Awarded financial support for attending 33rd Conference on Neural Information Processing System in Vancouver, Canada: 7 nights of a hotel stay.
- **ICML 2019 Travel Award:** Awarded financial support for attending the 36th International Conference on Machine Learning in Long Beach, California, United States: 1,700 USD.

- **First Class Honors:** Bachelor of Engineering, Chulalongkorn University.

Language

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| Thai: | Native |
| English: | TOEFL-iBT: 105/120 (Mar 2016) |
| Japanese: | JLPT N2 (Dec 2016) |

Publication

Conference Proceeding

- [C1] Takashi Ishida, Ikko Yamane, **Nontawat Charoenphakdee**, Gang Niu, and Masashi Sugiyama. "Is the Performance of My Deep Network Too Good to Be True? A Direct Approach to Estimating the Bayes Error in Binary Classification". In: *ICLR (Notable-top-5%)*. 2023.
- [C2] Nuttapon Chairatanakul, Noppayut Sriwatanasakdi, **Nontawat Charoenphakdee**, Xin Liu, and Tsuyoshi Murata. "Cross-lingual Transfer for Text Classification with Dictionary-based Heterogeneous Graph". In: *Findings of EMNLP*. 2021.
- [C3] **Nontawat Charoenphakdee**, Zhenghang Cui, Yivan Zhang, and Masashi Sugiyama. "Classification with Rejection Based on Cost-sensitive Classification". In: *ICML*. 2021.
- [C4] **Nontawat Charoenphakdee***, Jayakorn Vongkulbhisal*, Nuttapon Chairatanakul, and Masashi Sugiyama. "On Focal Loss for Class-Posterior Probability Estimation: A Theoretical Perspective". In: *CVPR*. 2021. (*equal contribution).
- [C5] Voot Tangkaratt, **Nontawat Charoenphakdee**, and Masashi Sugiyama. "Robust Imitation Learning from Noisy Demonstrations". In: *AISTATS*. 2021.
- [C6] Yivan Zhang, **Nontawat Charoenphakdee**, Zhenguo Wu, and Masashi Sugiyama. "Learning from Aggregate Observations". In: *NeurIPS*. 2020.
- [C7] **Nontawat Charoenphakdee**, Jongyeong Lee, Yiping Jin, Dittaya Wanvarie, and Masashi Sugiyama. "Learning Only from Relevant Keywords and Unlabeled Documents". In: *EMNLP-IJCNLP*. 2019.
- [C8] **Nontawat Charoenphakdee**, Jongyeong Lee, and Masashi Sugiyama. "On Symmetric Losses for Learning from Corrupted Labels". In: *ICML (Long Oral)*. 2019.
- [C9] **Nontawat Charoenphakdee** and Masashi Sugiyama. "Positive-Unlabeled Classification under Class Prior Shift and Asymmetric Error". In: *SDM*. 2019.
- [C10] Seiichi Kuroki, **Nontawat Charoenphakdee**, Han Bao, Junya Honda, Issei Sato, and Masashi Sugiyama. "Unsupervised Domain Adaptation Based on Source-guided Discrepancy". In: *AAAI*. 2019.
- [C11] Chenri Ni, **Nontawat Charoenphakdee**, Junya Honda, and Masashi Sugiyama. "On the Calibration of Multiclass Classification with Rejection". In: *NeurIPS*. 2019.
- [C12] Yueh-Hua Wu, **Nontawat Charoenphakdee**, Han Bao, Voot Tangkaratt, and Masashi Sugiyama. "Imitation Learning from Imperfect Demonstration". In: *ICML*. 2019.

Journal Article

- [J1] S. Takamoto, C. Shinagawa, D. Motoki, K. Nakago, W. Li, I. Kurata, T. Watanabe, Y. Yayama, H. Iriguchi, Y. Asano, T. Onodera, T. Ishii, T. Kudo, H. Ono, R. Sawada, R. Ishitani, M. Ong, T. Yamaguchi, T. Kataoka, A. Hayashi, **N. Charoenphakdee**, and T. Ibuka. "Towards Universal Neural Network Potential for Material Discovery Applicable to Arbitrary Combination of 45 Elements". In: *Nature Communications* (2022).
- [J2] Taira Tsuchiya, **Nontawat Charoenphakdee**, Issei Sato, and Masashi Sugiyama. "Semi-Supervised Ordinal Regression Based on Empirical Risk Minimization". In: *Neural Computation* (2021).
- [J3] Zhenghang Cui, **Nontawat Charoenphakdee**, Issei Sato, and Masashi Sugiyama. "Classification from Triplet Comparison Data". In: *Neural Computation* (2020).

Workshop Article & Preprint

- [P1] So Takamoto, **Nontawat Charoenphakdee**, and Chikashi Shinagawa. *Towards Creating Benchmark Datasets of Universal Neural Network Potential for Material Discovery*. *NeurIPS Machine Learning and the Physical Sciences Workshop*. 2022.
- [P2] Yucheng Zhang, **Nontawat Charoenphakdee**, and So Takamoto. *Do Better QM9 Models Extrapolate as Better Quantum Chemical Property Predictors?* *NeurIPS Machine Learning and the Physical Sciences Workshop*. 2022.
- [P3] Shuhan Zheng and **Nontawat Charoenphakdee**. *Diffusion models for missing value imputation in tabular data*. *NeurIPS Table Representation Learning Workshop*. 2022.

- [P4] **Nontawat Charoenphakdee**, Jongyeong Lee, and Masashi Sugiyama. *A Symmetric Loss Perspective of Reliable Machine Learning*. arXiv preprint arXiv:2101.01366, An invited article preprint for [the Fields Institute Communications Series on Data Science and Optimization](#). 2021.
- [P5] Hideaki Imamura, **Nontawat Charoenphakdee**, Futoshi Futami, Issei Sato, Junya Honda, and Masashi Sugiyama. *Time-varying Gaussian Process Bandit Optimization with Non-constant Evaluation Time*. arXiv preprint arXiv:2003.04691. 2020.
- [P6] Jongyeong Lee, **Nontawat Charoenphakdee**, Seiichi Kuroki, and Masashi Sugiyama. *Domain Discrepancy Measure for Complex Models in Unsupervised Domain Adaptation*. arXiv preprint arXiv:1901.10654, Presented at [SNL2019 Workshop](#). 2019.
- [P7] Yivan Zhang, **Nontawat Charoenphakdee**, and Masashi Sugiyama. *Learning from Indirect Observations*. arXiv preprint arXiv:1910.04394. 2019.
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