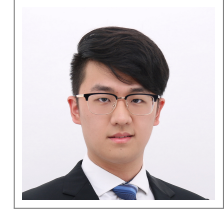


Mr. Wu Zhaoxuan



Position:

Ph.D. Student under
Institute of Data Science (IDS), National University of Singapore (NUS), and
NUS Graduate School Integrative Sciences and Engineering Program (ISEP)

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RESEARCH INTERESTS

- Collaborative machine learning (e.g., data valuation, federated learning, incentives, fairness)
- Resource-efficient machine learning (e.g., Bayesian optimization)
- Large language models (e.g., prompting)
- Deep learning & applications

ACADEMIC QUALIFICATIONS

- **Doctor of Philosophy in Data Science** Singapore
National University of Singapore *Aug 2020 – Present*
 - CAP: 5.00/5.00
 - Thesis Title: **Collaborative Machine Learning**
 - Supervisor: Prof. Bryan Kian Hsiang Low
 - Thesis Advisory Committee: Prof. See-Kiong Ng, Prof. Vincent Yan Fu Tan, Prof. Bryan Kian Hsiang Low
- **Bachelor of Science (Honors) in Data Science & Analytics** Singapore
National University of Singapore *Aug 2016 – Jun 2020*
 - **Minor in Computer Science**
 - CAP: 4.82/5.00; Honors (Highest Distinction)
 - Thesis Title: Deep Learning for Glaucoma Diagnosis
 - Supervisor: Prof. Alexandre Hoang Thiery
 - Award: Best Academic Project in Data Science & Analytics Discipline

SCHOLARSHIPS

- Aug 2023 – Aug 2024 NUSGS Research Incentive Award
- Feb 2023 – Feb 2024 Singapore Data Science Consortium (SDSC) Dissertation Research Fellowship
- Aug 2020 – Aug 2024 President's Graduate Fellowship (Ph.D.)
- Jan 2018 – May 2018 UTown Scholarship - Tin Ka Ping Foundation Scholarship
- Nov 2011 – Nov 2015 Singapore SM1 School-based Scholarship (Secondary & Pre-U)

PUBLICATIONS

* = equal contribution / co-first authorship

- Zhaoxuan Wu, Mohammad Mohammadi Amiri, Ramesh Raskar, and Bryan Kian Hsiang Low. (2024). **Incentive-Aware Federated Learning with Training-Time Model Rewards**. In *Proceedings of the 12th International Conference on Learning Representations (ICLR-24)* [31% Acceptance Rate].
- Xiaoqiang Lin*, Zhaoxuan Wu*, Zhongxiang Dai, Wenyang Hu, Yao Shu, See-Kiong Ng, Patrick Jaillet, and Bryan Kian Hsiang Low (2023). **Use Your INSTINCT: INSTruction optimization usIng Neural bandits Coupled with Transformers**. In *the 37th Conference on Neural Information Processing Systems (NeurIPS'23) Workshop on Instruction Tuning and Instruction Following*.
- Xinyi Xu, Zhaoxuan Wu, Arun Verma, Chuan Sheng Foo, and Bryan Kian Hsiang Low (2023). **FAIR: Fair Collaborative Active Learning with Individual Rationality for Scientific Discovery**. In *Proceedings of the 26th International Conference on Artificial Intelligence and Statistics (AISTATS-23)* [29.0% Acceptance Rate].
- Zhaoxuan Wu, Yao Shu, and Bryan Kian Hsiang Low (2022). **DAVINZ: Data Valuation using Deep Neural Networks at Initialization**. In *Proceedings of the 39th International Conference on Machine Learning (ICML-22)* [21.9% Acceptance Rate].
- Yao Shu, Zhongxiang Dai, Zhaoxuan Wu, and Bryan Kian Hsiang Low (2022). **Unifying and Boosting Gradient-Based Training-Free Neural Architecture Search**. In *Advances in Neural Information Processing Systems 35: 36th Annual Conference on Neural Information Processing Systems (NeurIPS'22)* [25.6% Acceptance Rate].
- Xinyi Xu*, Zhaoxuan Wu*, Chuan Sheng Foo, and Bryan Kian Hsiang Low (2021). **Validation Free and Replication Robust Volume-based Data Valuation**. In *Advances in Neural Information Processing Systems 34: 35th Annual Conference on Neural Information Processing Systems (NeurIPS'21)* [25.7% Acceptance Rate].
- Quoc Phong Nguyen*, Zhaoxuan Wu*, Bryan Kian Hsiang Low, and Patrick Jaillet (2021). **Trusted-Maximizers Entropy Search for Efficient Bayesian Optimization**. In *Proceedings of the 37th Conference on Uncertainty in Artificial Intelligence (UAI-21)* [26.5% Acceptance Rate].

BOOK CHAPTERS

- Zhaoxuan Wu, Xinyi Xu, Rachael Hwee Ling Sim, Yao Shu, Xiaoqiang Lin, Lucas Agussurja, Zhongxiang Dai, See-Kiong Ng, Chuan-Sheng Foo, Patrick Jaillet, Trong Nghia Hoang, and Bryan Kian Hsiang Low (2024). **Data Valuation in Federated Learning**. In *L. M. Nguyen, T. N. Hoang, P.-Y. Chen, editors, Federated Learning: Theory and Practice, chapter 15, pages 281-296, Academic Press*.
- Xiaoqiang Lin, Xinyi Xu, Zhaoxuan Wu, Rachael Hwee Ling Sim, See-Kiong Ng, Chuan-Sheng Foo, Patrick Jaillet, Trong Nghia Hoang, and Bryan Kian Hsiang Low (2024). **Fairness in Federated Learning**. In *L. M. Nguyen, T. N. Hoang, P.-Y. Chen, editors, Federated Learning: Theory and Practice, chapter 8, pages 143-160, Academic Press*.
- Rachael Hwee Ling Sim, Sebastian Shenghong Tay, Xinyi Xu, Yehong Zhang, Zhaoxuan Wu, Xiaoqiang Lin, See-Kiong Ng, Chuan-Sheng Foo, Patrick Jaillet, Trong Nghia Hoang, and Bryan Kian Hsiang Low (2024). **Incentives in Federated Learning**. In *L. M. Nguyen, T. N. Hoang, P.-Y. Chen, editors, Federated Learning: Theory and Practice, chapter 16, pages 299-309, Academic Press*.

PROFESSIONAL SERVICE

- Conference reviewer/PC member for
 - AAAI Conference on Artificial Intelligence (AAAI), 2024
 - International Conference on Artificial Intelligence and Statistics (AISTATS), 2024
 - International Joint Conference on Artificial Intelligence (IJCAI), 2024
 - International Conference on Learning Representations (ICLR), 2023, 2024
 - International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2023, 2024
 - International Conference on Machine Learning (ICML), 2022, 2023
 - Conference on Neural Information Processing Systems (NeurIPS), 2022, 2023
 - Asian Conference on Machine Learning (ACML), 2022, 2023
- Received **Top Reviewer** for NeurIPS 2023

INVITED TALKS

- “Use Your INSTINCT: INSTruction optimization usIng Neural bandits Coupled with Transformers”. Deep Learning and Optimization Seminar (jointly organized by Westlake University, CityU, Peking University), virtual, Oct 24, 2023.

TEACHING EXPERIENCE

- CS3244 (Machine Learning), NUS *Spring 2022*
 - Teaching Assistant for 1 tutorial class
- CS3244 (Machine Learning), NUS *Spring 2021*
 - Teaching Assistant for 2 tutorial classes
- DSA2102 (Essential Data Analytics Tools: Numerical Computation), NUS *Fall 2020*
 - Teaching Assistant

HONORS AND AWARDS

- **Lijen Industrial Development Medal AY2019/20**
 - Being the Honors year student with the *best academic exercise/project* in the Data Science and Analytics discipline in the Faculty of Science, NUS
 - In my Honors project, I designed a multi-task U-Net architecture for learning three tasks on Optical Coherence Tomography (OCT) images simultaneously
 - Achieved an overall average test accuracy of 91.4% across tasks and further developed an algorithm to reconstruct a more realistic predicted eye structure
- **Faculty of Science Dean’s List Recipient for Semester 2 AY2019/20, Semester 1 AY2018/19 and Semester 2 AY2017/18**
 - Awarded to students in the *top 5 percent* of the total undergraduate Science cohort
- **NUS Science Diamond Jubilee Student Award 2019**
 - A testimony of excellent academic track records both in NUS and the Student Exchange Program to Northwestern University, IL, USA
- Gold Award in Nanyang Research Program 2014

- Awarded for the Electrical & Electronic Engineering project on Nanowires Silicon/PEDOT:PSS Hybrid Solar Cells after months of experiments, written report, and oral presentation
- High Distinction in National Economics & Financial Management Competition 2015
- Young Engineers & Scientist (YES) Academic Award Physics 2013
 - Awarded by the Defence Science & Technology Agency of Singapore
- Silver Award in Singapore Junior Physics Olympiad 2012

EMPLOYMENT HISTORY

- **NUS AI Innovation & Commercialization Center** Suzhou, China
Research Intern *May 2019 – Aug 2019*
 - **Supervisors:** Prof. Teck Khim Ng and Prof. Yin Xu
 - **AutoML:** Contributed to the development of ***Rafiki***, an open-source distributed system that offers automated Machine Learning (AutoML) model training, tuning and deployment services
 - **ASR:** Enriched Rafiki's base of supported tasks to Automated Speech Recognition (ASR) and integrated a ready-to-use DeepSpeech model into the Rafiki framework
 - **Impact:** Enable users with minimal background knowledge in AI to train, tune and deploy an ASR application with a Word Error Rate of less than 10%
 - **Insignia Ventures Partners** Singapore
Full-Stack Developer Intern *Jan 2018 – Jul 2018*
 - **Supervisors:** Dr. Yinglan Tan and Mr. Ridy Lie
 - **Web Development:** Designed and developed features in the company's web application under the engineering team, including KPIs, web scraping, securities and third-party application integration, thus improving the user-friendliness of the application and the efficiency of the investment process
 - **Pteris Global Limited** Singapore
Software Developer Intern *Mar 2016 – May 2016*
 - **VBA:** Designed and developed VBA programs to generate templates for project costing estimate, manpower costing estimate and procurement list, resulting in a much more reliable automated costing calculation free of human error, and at the same time, increased the productivity by reducing labor hours