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)

Contact: +65 84385708
Email: wu.zhaoxuan@u.nus.edu
Office: #04-06, 3 Research Link, Singapore 117602
Website: https://zhaoxuanwu.github.io

Research Interests

- Collaborative machine learning (e.g., data valuation, federated learning)
- Resource-efficient machine learning (e.g., Bayesian optimization)
- 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 2020 – Present — ISEP-IDS Scholarship (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)

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

Publications

* = equal contribution / co-first authorship

- 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].

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

Professional Service

- Conference reviewer/PC member for
  - International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2023
  - International Conference on Learning Representations (ICLR), 2023
  - Asian Conference on Machine Learning (ACML), 2022
  - Conference on Neural Information Processing Systems (NeurIPS), 2022
  - International Conference on Machine Learning (ICML), 2022

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, tunning 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