

Zixin Zhong

PH. D.

Department of Mathematics, National University of Singapore

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Research Interests

Reinforcement learning, online machine learning (e.g., multi-armed bandit problem)

Work Experience

University of Alberta

Edmonton, Canada

POSTDOCTORAL FELLOW IN DEPARTMENT OF COMPUTER SCIENCE

Jul. 2022 – Present

- Supervisors: Prof. Csaba Szepesvári (also leading the Foundations team at DeepMind)

National University of Singapore (NUS)

Singapore

RESEARCH FELLOW IN DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Jun. 2021 – Jul. 2022

- Supervisors: Prof. Vincent Y. F. Tan and Prof. Wang Chi Cheung

Education

National University of Singapore (NUS)

Singapore

PH. D. IN DEPARTMENT OF MATHEMATICS, CPA: 4.24/5.00

Aug. 2017 – Oct. 2021

- Supervisors: Prof. Vincent Y. F. Tan (Main) and Prof. Wang Chi Cheung

Sun Yat-sen University (SYSU)

Guangzhou, China

B. S. IN SCHOOL OF MATHEMATICS (OUTSTANDING GRADUATE), GPA: 4.10/5.00

Aug. 2013 – Jun. 2017

- Thesis Advisor: Prof. Guocan Feng

University of California, Berkeley (UCB)

Berkeley, U.S.A

INTERNATIONAL STUDENT

Aug. 2015 – Dec. 2015

Sun Yat-sen University (SYSU)

Guangzhou, China

YAT-SEN SCHOOL (INCLUDING TOP 5% FROM SCHOOL OF MATHEMATICS)

Nov. 2014 – Jun. 2017

The Affiliated High School of South China Normal University

Guangzhou, China

MIDDLE SCHOOL

Aug. 2007 – Jun. 2013

Tutorials

Pure Exploration in Multi-Armed Bandits

Zixin Zhong, Vincent Y. F. Tan

International Joint Conference on Artificial Intelligence (IJCAI), Messe Wien, Vienna, Austria, July 2022

*: Corresponding author

Preprints

Optimal Clustering with Bandit Feedback

Junwen Yang, Zixin Zhong, and Vincent Y. F. Tan

Submitted, February 2022

On the Pareto Frontier of Regret Minimization and Best Arm Identification in Multi-Armed Bandits

Zixin Zhong, Wang Chi Cheung, and Vincent Y. F. Tan

Submitted, January 2022

Almost Optimal Variance-Constrained Best Arm Identification

Yunlong Hou, Vincent Y. F. Tan, and Zixin Zhong*

Submitted, January 2022

Journal Papers

Fast Beam Alignment via Pure Exploration in Multi-armed Bandits (journal version)

Wei Yi, Zixin Zhong*, and Vincent Y. F. Tan

IEEE Transactions on Wireless Communications (IEEE TWC), Accepted in October 2022

Thompson Sampling Algorithms for Cascading Bandits [Code]

Zixin Zhong, Wang Chi Cheung, and Vincent Y. F. Tan

Journal of Machine Learning Research (JMLR), Vol. 22, No. 218, Pages 1 – 66, September 2021

Conference Papers

Fast Beam Alignment via Pure Exploration in Multi-armed Bandits

Yi Wei, Zixin Zhong, and Vincent Y. F. Tan

IEEE International Symposium on Information Theory (ISIT), Aalto, Finland, June 2022

Probabilistic Sequential Shrinking: A Best Arm Identification Algorithm for Stochastic Bandits with Corruptions [Code]

Zixin Zhong, Wang Chi Cheung, and Vincent Y. F. Tan

International Conference on Machine Learning (ICML), Virtual, July 2021

Best Arm Identification for Cascading Bandits in the Fixed Confidence Setting

Zixin Zhong, Wang Chi Cheung, and Vincent Y. F. Tan

International Conference on Machine Learning (ICML), Virtual, July 2020

A Thompson Sampling Algorithm for Cascading Bandits (oral presentation)

Wang Chi Cheung, Vincent Y. F. Tan, and Zixin Zhong

International Conference on Artificial Intelligence and Statistics (AISTATS), Naha, Okinawa, Japan, April 2019

Thesis

Performance Guarantees for Online Learning: Cascading Bandits and Adversarial Corruptions

Zixin Zhong

Ph.D. Thesis, Department of Mathematics, National University of Singapore, October 2021

Professional Activities

CONFERENCE REVIEWER

- 2023 International Conference on Artificial Intelligence and Statistics (AISTATS)
International Conference on Learning Representations (ICLR)
- 2022 Neural Information Processing Systems (NeurIPS)
International Conference on Machine Learning (ICML)
International Conference on Artificial Intelligence and Statistics (AISTATS)
International Conference on Learning Representations (ICLR)
- 2021 Neural Information Processing Systems (NeurIPS)
International Conference on Artificial Intelligence and Statistics (AISTATS)

JOURNAL REVIEWER

- IEEE Transactions on Information Theory (TIT)
IEEE Transactions on Signal Processing (TSP)
Transactions on Machine Learning Research (TMLR)

Presentation

- INFORMS 2021 Annual Meeting *Virtual*
Oral presentation for the work appeared at ICML 2021 *Oct. 2021*
- The 22nd Conference of the International Federation of Operational Research Societies (IFORS) *Virtual*
Oral presentation for the work appeared at ICML 2021 *Aug. 2021*
- The 3rd TBSI Workshop on Learning Theory (WOLT) *Tsinghua-Berkeley
Shenzhen institute, China*
Oral and poster presentation for the work appeared at ICML 2021 *Jul. 2021*
- Analytics for X, iORA, NUS *National University of
Singapore*
Oral presentation for the work appeared at ICML 2021 *May. 2021*
- Rising Stars: Academic Career Workshop in EECS *University of Texas At
Austin, U.S.A*
Oct. 2022

Volunteer Activities

- Nov. 2021 The 13th Asian Conference on Machine Learning (ACML) *Singapore*
- Nov. 2014 The 90th Anniversary of Sun Yat-Sen University *Guangzhou, Guangdong*
- Aug. 2014 Aid Education in Mountainous Area *Heyuan, Guangdong*

Internship

AiDA Thchnologies Pte Ltd

Singapore

DATA SCIENTIST

Nov. 2020 – Mar. 2021

Reporting officers: Dr. Tan Geok Leng (CEO), Dr. Zha Wei

- **Insurance upsell/cross sell.** Developing a predictive analytics model for identifying candidates who have a propensity to buy insurance products from a bank's existing CASA customer base.
- **PIER71 Smart Port Challenge.** Developing a machine learning model to predict the Estimated Time of Arrival (ETA) for vessels plying between two known port pairs which achieves 1.34% percentage error. Analyzing the limitations of the model so developed.
- **Trading Floor Misconduct.** Developing a framework for text mining using Regular Expression to conduct experiments to lockdown parameters so that Risk Events may be detected with low False Alarm rates. The framework is now used as a standard tool in the company.

Honors & Awards

2017 – 2021 NUS Research Scholarship

Singapore

2014 China National Scholarship

China

2014, 2015 SYSU First Class Scholarship

Guangzhou, China

Skills

Programming Python, Matlab, Latex, R, C/C++

Languages English, Mandarin, Cantonese