

Zixin Zhong

PH. D.

Department of Mathematics, National University of Singapore

✉ zixin.zhong@u.nus.edu | 🏠 zixinzh.github.io/homepage | 🎓 Zixin Zhong



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

- Rising Stars: Academic Career Workshop in EECS *University of Texas At Austin, U.S.A*
Oral and poster presentation of existing works *Oct. 2022*
- 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*

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++

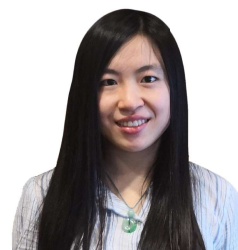
Languages English, Mandarin, Cantonese

钟梓昕

博士 (生于 1995 年 8 月)

新加坡国立大学数学系

✉ zixin.zhong@u.nus.edu | 🏠 zixinzh.github.io/homepage | 🎓 Zixin Zhong



研究兴趣

强化学习, 机器学习 (如: multi-armed bandit 算法)

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

工作经历

阿尔伯塔大学 (University of Alberta)

计算机系博士后

加拿大埃德蒙顿

2022 年 7 月至今

- 导师: Csaba Szepesvári 教授 (同时带领 Deepmind 的 Foundations 团队)

新加坡国立大学 (NUS)

电子与计算机工程系博士后

新加坡

2021 年 6 月 - 2022 年 7 月

- 导师: Vincent Y. F. Tan 教授和 Wang Chi Cheung 教授

教育背景

新加坡国立大学 (NUS)

数学系博士, 绩点: 4.24/5.00

新加坡

2017 年 8 月 - 2021 年 10 月

- 导师: Vincent Y. F. Tan 教授 (主) 和 Wang Chi Cheung 教授

中山大学 (SYSU)

数学学院理学士 (校级优秀毕业生), 绩点: 4.10/5.00

中国广州

2013 年 8 月 - 2017 年 6 月

- 毕业论文导师: 冯国灿教授

加州大学伯克利分校 (UCB)

国际交流学生

美国伯克利

2015 年 8 月 - 2015 年 12 月

中山大学 (SYSU)

逸仙学院 (国家基础学科拔尖学生培养试验计划)

中国广州

2014 年 11 月 - 2017 年 6 月

- 招收数学学院前 5% 的学生

华南师范大学附属中学

中学

中国广州

2007 年 8 月 - 2013 年 6 月

会议报告

Pure Exploration in Multi-Armed Bandits

Zixin Zhong (presented by Vincent Y. F. Tan)

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

*: 通讯作者

已提交论文

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

期刊论文

Fast Beam Alignment via Pure Exploration in Multi-armed Bandits (Journal Version)

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

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会议论文

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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

毕业论文

Performance Guarantees for Online Learning: Cascading Bandits and Adversarial Corruptions

Zixin Zhong

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

审稿工作

会议审稿

- 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)

期刊审稿

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

论坛报告

- Rising Stars: Academic Career Workshop in EECS
报告并通过海报展示目前的工作
美国
德州大学奥斯汀分校
2022 年 10 月
- INFORMS 2021 Annual Meeting
报告发表于 ICML 2021 的工作
线上
2021 年 10 月
- The 22nd Conference of the International Federation of Operational Research Societies (IFORS)
报告发表于 ICML 2021 的工作
线上
2021 年 8 月
- The 3rd TBSI Workshop on Learning Theory (WOLT)
报告并通过海报展示发表于 ICML 2021 的工作
中国
清华-伯克利深圳学院
2021 年 7 月
- Analytics for X, iORA, NUS
报告发表于 ICML 2021 的工作
新加坡国立大学
2021 年 5 月

志愿者活动

- 2021 年 11 月 The 13th Asian Conference on Machine Learning (ACML)
新加坡
- 2014 年 11 月 中山大学第 90 周年校庆
广东广州
- 2014 年 8 月 中山大学数学学院彩虹支教队
广东河源

实习经历

AiDA Thchnologies Pte Ltd

新加坡

数据分析

2020 年 11 月 - 2021 年 3 月

主管: Tan Geok Leng 博士 (CEO), Zha Wei 博士

- 建立 LGBT 模型从银行现有的客户群中识别倾向于购买保险产品的人群。
- 建模预测往返于两个已知港口之间的船只的预计到达时间, 达到 1.34% 的误差率; 并分析模型的局限性。
- 使用正则表达式等工具构建进行文本挖掘的框架, 从而以较低的虚警率从聊天记录文本中识别不当的交易行为。该框架现在作为标准工具被公司的其他员工使用。

荣誉奖项

2017 - 2021 新加坡国立大学奖学金 (NUS Research Scholarship)

新加坡

2014 国家奖学金

中国

2014, 2015 中山大学优秀学生奖学金一等奖

中国广州

技能及其他

编程 Python, Matlab, Latex, R, C/C++

语言 英语, 普通话, 粤语