Tianyi Peng

CONTACT INFORMATION

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(617) 230-1062

EDUCATION

Massachusetts Institute of Technology 2017 - Current
Ph.D. in Statistics and Aeronautics/Astronautics, GPA: 5.0/5.0
Advisor: Vivek Farias

Tsinghua University 2013 - 2017
Bachelor in Computer Science
- ⋆ Selected for the *Yao Class* (a CS pilot program led by Prof. Andrew C. Yao)
- ⋆ Graduated with Best Thesis Award

INTERESTS

Experimentation, Causal Inference, High-Dimension Statistics, Reinforcement Learning, Anomaly Detection in Operations, Data-Driven Decision Making

RECENT PAPERS

Learning Treatment Effects in Panels with General Intervention Patterns
with Vivek Farias and Andrew Li
Preliminary: **NeurIPS 2021** *(Oral, top 0.6% of submissions)*
Under review in *Journal of the American Statistical Association*
- ⋆ *Finalist*, **MSOM Best Student Paper Prize 2022**

Synthetic Control for TestOps at ABI: Models, Algorithms, and Infrastructure
with Vivek Farias et al.
To appear in *INFORMS Journal on Applied Analytics*
- ⋆ *Finalist*, **Wagner Prize 2022**

Markovian Interference in Experiments
with Vivek Farias, Andrew Li, and Andrew Zheng
Preliminary: **NeurIPS 2022**
Under preparation for *Management Science*
- ⋆ *Finalist*, **Jeff McGill Student Paper Award 2022**
- ⋆ *Finalist*, **Applied Probability Society Best Student Paper Prize 2022**

Fixing Inventory Inaccuracies at Scale
with Vivek Farias and Andrew Li
Preliminary: **ICML 2021**, **MSOM Supply Chain SIG 2022**
Under review in *Management Science*

Synthetically Controlled Bandits
with Vivek Farias, Ciamac Moallemi, and Andrew Zheng
Preliminary: **MSOM Service Management SIG 2022**
Under review in *Management Science*

The Limits to Learning a Diffusion Model
with Jackie Baek, Vivek Farias, Andreea Georgescu, Retsef Levi, Deeksha Sinha, Joshua Wilde, Andrew Zheng

Preliminary: **EC 2021**
R&R for *Management Science*

Uncertainty Quantification for Low-Rank Matrix Completion with Heterogeneous and Sub-Exponential Noise
with Vivek Farias and Andrew Li
Preliminary: **AISTATS 2022**
Under preparation for *Operations Research*

Teaching Experience

Hands-on Deep Learning (15.S04)
Teaching Assistant for MBA Students, Rating 6.9/7.0 — Spring 2022

Quantum Information and Quantum Computation
Lecturer for MIT High School Studies Program (Not Rated) — Summer 2019

Statistics for Engineers and Scientists (6.434)
Teaching Assistant (Not Rated) — Fall 2018

Industry Collaborations

Anheuser-Busch InBev — 2020-Current
Applying our work to developing an experimentation platform for physical retailers.

TikTok (ByteDance) — 2022-Current
Addressing interference problems in the experimentation platform at Bytedance.
Developed multi-target recommendation algorithms in TikTok (Intern, Summer 2021).

Takeda — 2022-Current
Mitigating late or misdiagnosis issues in healthcare based on causal learning.

Liberty Mutual — 2021-Current
Developing novel data-imputation methods for improving insurance pricing.

Broad Institute — 2021-Current
Developed tensor-imputation methods for improving multi-omic data analysis.

Papers in Quantum

Optimal Entanglement Swapping and Distribution
with Wenhan Dai and Moe Win
IEEE Journal on Selected Areas in Communications, vol. 38, pp. 540-556, 2020
⋆ **Best Paper Award**, *International Conference on Computing, Networking and Communications (ICNC 2020)*

Quantum Queuing Delay
with Wenhan Dai and Moe Win
IEEE Journal on Selected Areas in Communications, vol. 38, pp. 605-618, 2020
⋆ *ICNC 2020*

Simulating Large Quantum Circuits on a Small Quantum Computer
Tianyi Peng, Maris Ozols, Aram Harrow, Xiaodi Wu
Physical Review Letters *125, 150504 (2020)*

Quantum Uncertainty Relation of Coherence
Xiao Yuan, Ge Bai, Tianyi Peng, Xiongfeng Ma

Physical Review A 96 (3), 032313

Tight Detection Efficiency Bounds of Bell Tests in No-signaling Theories
Zhu Cao, Tianyi Peng
Physical Review A 94, 042126

Efficient and Robust Physical Layer Key Generation
Tianyi Peng, Wenhan Dai, Moe Win
Military Communications Conference (MILCOM) 2019

Remote State Preparation for Multiple Parties
Wenhan Dai, Tianyi Peng, Moe Win
IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2019, 7983-7987, **Invited Paper**

Funding Proposal Experience

Main writer, NSF Foundations of Emerging Technologies, Medium, *Quantum Localization and Synchronization Networks*. PIs: Xiaodi Wu, Moe Win, Sanjoy K. Mitter.
NSF-CCF-1956211 (1955206), 2020-2024 $1,180,000

Patent

1. System and Method for Estimation of Treatment Effects from Observational and Corrupted A/B Testing Data
with Vivek Farias and Andrew A. Li PCT/US22/25140

2. Physical Layer Key Generation
with Moe Win, Wenhan Dai, Zehao Yu US Patent App. 17/014,611

Service

Reviewer for *Management Science, Mathematical Programming, AAAI 2023, AISTATS 2022, IEEE Journal on Selected Areas in Communications, Quantum, ACM Transactions on Quantum Computing, New Journal of Physics*
Organizer, MIT LIDS Student Conference 2020

Honors and Awards

Finalist, MSOM Best Student Paper Prize 2022
Finalist, Jeff McGill Student Paper Award 2022
Finalist, Applied Probability Society Best Student Paper Prize 2022
Finalist, Daniel H. Wagner Prize for Excellence 2022
Finalist, Post-Pandemic Supply Chain and Healthcare Management conference, Best Paper Competition 2021
Best Paper Award, ICNC 2020
1st place, MIT Quantum Hackathon 2020
2nd place (among 2780 teams), IEEE programming competition IEEExtreme 13.0 2019
Best Thesis Award, Tsinghua University 2017
Andrew C. Yao Award, Tsinghua University 2016
China 12-person team for International Olympiad in Informatics (IOI) 2013
International Gold Prize, Asia-Pacific Informatics Olympiad (APIO) 2012

Talks

Next-Generation Experimentation Platform
2-hour Invited Talk at ByteDance 2022

Learning from Observational Commerce Data
Group Meeting, Cornell ORIE 2022
RMP Conference 2022
Rotman Young Scholar Seminar, University of Toronto 2022

MOILS Seminar, NYU Stern	2022
NeurIPS Conference	2021
INFORMS Annual Meeting	2021
ByteDance Applied Machine Learning Group	2021
Yao Class, Tsinghua	2021

Fixing Inventory Inaccuracies at Scale

ICML Conference	2021
INFORMS Annual Meeting	2020
MIT LIDS & Stats Tea Talk	2020

Uncertainty Quantification for Low-Rank Matrix Completion with Heterogeneous and Sub-Exponential Noise

AISTATS Conference	2022
INFORMS Annual Meeting	2020

References

Vivek Farias
MIT Sloan School of Management
Email: vivekf@mit.edu

Retsef Levi
MIT Sloan School of Management
Email: retsef@mit.edu

Andrew Li
CMU Tepper School of Business
Email: aali1@cmu.edu

Xiaodi Wu (for my work in quantum computing)
University of Maryland
Department of Computer Science
Email: xwu@cs.umd.edu