

Tianyi Peng

CONTACT INFORMATION tianyi@mit.edu <https://tianyipeng.github.io>
(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*

Generalized Synthetic Control for TestOps at ABI
with Vivek Farias et al.
To appear in *INFORMS Journal on Applied Analytics*
★ *Winner, Wagner Prize 2022*

Markovian Interference in Experiments
with Vivek Farias, Andrew Li, and Andrew Zheng
Preliminary: **NeurIPS 2022**
Under preparation for *Management Science*
★ *Winner, Jeff McGill Student Paper Award 2022*
★ *Winner, 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)** Spring 2022
Teaching Assistant for MBA Students, Rating 6.9/7.0

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

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

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	<i>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</i>	\$1,180,000
PATENT	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
	Physical Layer Key Generation with Moe Win, Wenhan Dai, Zehao Yu	US Patent App. 17/014,611
SERVICE	Reviewer for <i>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</i> Organizer, MIT LIDS Student Conference	2020
HONORS AND AWARDS	Winner, Jeff McGill Student Paper Award Winner, Applied Probability Society Best Student Paper Prize Winner, Daniel H. Wagner Prize for Excellence Finalist, MSOM Best Student Paper Prize Finalist, Post-Pandemic Supply Chain and Healthcare Management conference, Best Paper Competition Best Paper Award, ICNC 1st place, MIT Quantum Hackathon 2nd place (among 2780 teams), IEEE programming competition IEEEExtreme 13.0 Best Thesis Award, Tsinghua University Andrew C. Yao Award, Tsinghua University China 12-person team for International Olympiad in Informatics (IOI) International Gold Prize, Asia-Pacific Informatics Olympiad (APIO)	2022 2022 2022 2022 2021 2020 2020 2019 2017 2016 2013 2012
TALKS	<i>Next-Generation Experimentation Platform</i> 2-hour Invited Talk at ByteDance <i>Generalized Synthetic Control for TestOps at ABI</i> INFORMS Annual Meeting, Wagner Prize Presentation <i>Learning Treatment Effects in Panels with General Intervention Patterns</i>	2022 2022

INFORMS Annual Meeting	2022
Liberty Mutual Data Science Forum	2022
OM seminar, MIT	2022
Group Meeting of Nathan Kallus, 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
<i>Markovian Interference in Experiments</i>	
ByteDance, Experimentation group	2022
<i>Fixing Inventory Inaccuracies at Scale</i>	
ICML Conference	2021
INFORMS Annual Meeting	2020
MIT LIDS & Stats Tea Talk	2020
<i>Uncertainty Quantification for Low-Rank Matrix Completion with Heterogeneous and Sub-Exponential Noise</i>	
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