Qingyang Xu (徐清扬)

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RESEARCH INTERESTS

I am broadly interested in developing advanced techniques in machine learning, statistics and optimization to facilitate the discovery and clinical testing of novel therapeutics. In particular, I am interested in (1) applying artificial intelligence to predict clinical trial outcomes, (2) optimizing the clinical trial design using multi-armed bandit and reinforcement learning techniques, and (3) devising novel financial strategies to reduce the financial risk of early-stage biomedical investments.

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA 08/2018 – 05/2022
Ph.D. in Operations Research
Thesis: Financial and Analytic Innovations for Therapeutic Development (link)
Thesis advisor: Andrew W. Lo, MIT Sloan School of Management (Website)

Stanford University, Stanford, CA 09/2013 – 06/2017
B.S. Physics, with Honors and Concentration in Theoretical Physics
B.S. Mathematical and Computational Science (Applied Mathematics)
Graduation Honor: University Distinction (top 15% GPA of graduating class)

PUBLICATIONS

Incorporating Patient Preferences and Burden-of-disease in Evaluating ALS Drug Candidate AMX0035: A Bayesian Decision Analysis Perspective
First author, with Joonhyuk Cho, Zied Ben Chaouch, and Andrew W. Lo
Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration (2023) 24(3–4): 281–288

Accelerating Vaccine Innovation for Emerging Infectious Diseases via Parallel Discovery
Leading author, with Joseph Barberio, Jacob Becraft, Zied Ben Chaouch, et al.
Entrepreneurship and Innovation Policy and the Economy (2023) 2(1), 9–39

Real-Time Extended Psychophysiological Analysis of Financial Risk Processing
Second author, with Manish Singh, Sarah J. Wang, Tinah Hong, Mohammad M. Ghassemi, and Andrew W. Lo
PLOS ONE (2022) 17(7): e0269752

Identifying and Mitigating Potential Biases in Predicting Drug Approvals
First author, with Elaheh Ahmadi, Alexander Amini, Daniela Rus and Andrew W. Lo
Drug Safety (2022) 45: 521–533

Accelerating Glioblastoma Therapeutics via Venture Philanthropy
Co-First author, with Kien Wei Siah, Kirk Tanner, Olga Futer, John J. Frishkopf, Andrew W. Lo
Drug Discovery Today (2021) 26(7): 1744–1749

Two-Stage Framework for Seasonal Time Series Forecasting
First author, with Qingsong Wen and Liang Sun
IEEE International Conference on Acoustics, Speech, & Signal Processing (ICASSP) 2021

Bayesian Adaptive Clinical Trials for Anti-Infective Therapeutics during Epidemic Outbreaks
Leading author, with Shomesh E. Chaudhuri, Danying Xiao, and Andrew W. Lo
Harvard Data Science Review (2020) Special Issue on COVID-19. Featured in MIT Sloan News.

Visualizing probabilistic models in Minkowski space: an analytical coordinate embedding
Co-author, with Han Kheng Teoh, Katherine N. Quinn, Jaron Kent-Dobias, Colin B. Clement, and James P. Sethna. *Physical Review Research* (2020) 2, 03321

Fair and responsible drug pricing: A cast study of Radius Health and abaloparatide
First author, with Andrew W. Lo
Journal of Investment Management (2020) 18(1): 90–98

Search for $2\upsilon\beta\beta$ decay of ^{136}Xe to the 0_1^+ excited state of ^{136}Ba with the EXO-200 liquid xenon detector
Co-author, with Joshua Albert, et al.
Physical Review C (2016) 93, 035501

TEACHING EXPERIENCE

Teaching Assistant, MIT Sloan School of Management 09/2020 – 12/2020
Taught the second-year MBA course in Healthcare Finance with over 100 students.
Created lecture notes, held weekly recitations, and mentored students' hands-on projects.
Received end-of-semester ratings of 6.9/7 from the students.

WORK EXPERIENCE

Research Engineer, Helm.ai 01/2023 – present
Trained and deployed novel AI algorithms for object segmentation for autonomous vehicles.
Fine-tuned foundational models in computer vision for domain-specific object detection tasks.
Built software infrastructure to scale model training and evaluation on cloud computing platforms.

Machine Learning Research Scientist, Meta 10/2022 – 01/2023
Devised novel AI models for product recommendation in Oculus virtual reality system.

Researcher, MIT Operations Research Center 08/2018 – 05/2022
Designed novel machine learning algorithms to predict clinical trial outcomes.
Proposed reinforcement learning models to expedite clinical trials during epidemics.
Optimize large portfolios of highly correlated investments in novel drug development programs.

Research Intern, DAMO Academy, Alibaba Group 05/2020 – 08/2020
Designed novel deep learning models for anomaly detection and time series forecast.

Researcher, Physics Department, Cornell University 08/2017 – 05/2018
Conducted research in the intersection of theoretical physics and machine learning.
Published research paper in Physical Review Research.

HONORS & AWARDS

2nd Place – MIT FinTech Datathon 02/2019
Created top machine learning model to predict the yield rate of US Treasury bonds.

David S. Levine Award, Department of Physics, Stanford University 06/2016
Presented annually in recognition of the top physics undergraduate student.

Undergraduate Major Research Grant, Stanford University 04/2016 – 06/2017
Presented to the outstanding individual research proposals of undergraduate Honors Theses.

University Distinction, Class of 2017, Stanford University 06/2017
Awarded to the top 15% of the graduating class based on cumulative GPA

Stanford Fund Scholarship, Stanford University 09/2013 – 06/2017

Cornell Graduate Fellowship, Cornell University 08/2017 – 05/2018

PROFESSIONAL SERVICE

Reviewer: Harvard Data Science Review, Journal of Finance, IEEE International Conference on Data Mining (ICDM) 2020

LEADERSHIP & SERVICE

Founder & President, MIT Chinese Music Ensemble 10/2018 – 05/2022
Founded and managed the daily rehearsals and performances of MIT Chinese Music Ensemble. Performed at MIT Chinese Lunar New Year Gala and Harvard ARTS FIRST Festival.