Xiang MENG （孟祥）

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Education

Harvard University *Expected graduation year: 2025*

PhD in Statistics. Thesis Project: Causal inference and reinforcement learning in mobile health: Theory and real world concerns

Achievement: Bok Pedagogy Fellow in Statistics.

University of Washington (UW) *Graduated June 2020*

MS in Statistics: Advanced Methods and Data Science. GPA: 3.87/4.00. Member of Causal Inference Working Group
Award: Graduate School Conference Travel Award (IJCAI 2019)

National University of Singapore (NUS) *Graduated June 2018*

BS (Honors) Major: Quantitative Finance and Statistics. Minor: Computer Science
GPA: Overall 4.82/5.00, Dean's List recipient (top 5% of cohort); Lijen Industrial Development Medal (best project in the discipline)
Exchange program in University of California, San Diego (UCSD). Attended two graduate classes; received Provost's Honors

Work Experience

Sanofi *May 2022 – Aug 2022*

Summer Intern, Data and Data Science

- Co-Created a drug database that worth market value **~$1mil-5mil**. Developed a tree model with impact in academia (paper submission) and the company (replicable model) after initiating ~10 meetings with the clinical team and the data science team
- Assisted to consolidate 1000 lines+ R code; modified 150 lines+ R code to create a ready-to-use dataset from 400+ clinical trials.

Dymon Asia Capital *April 2017 – July 2017*

Summer Intern, Risk Analysis

- Improved risk reporting procedure for macro fund using VBA; shortened procedure from 2 hours to less than 20 seconds.
- Streamlined daily risk management by meticulously monitoring daily equity fund risk and macro fund risk.
- Conducted market research investigating relationship between fund level exposure and fund performance using Excel and R.

Research and Computational Experience

Anti-Sedentary Message Analysis in Mobile Health *September 2020 – Present*

Supervised by Prof. Susan Murphy

- Evaluated mobile health clinical trials by understanding with behavioral scientists' need and developing fair evaluation methods.
- Prepared usable data frames from 300,000+ lines of raw data from 3 different sources with 3500+ line of R scripts.
- Accelerated the code for an existing statistical model by 10x.

A Congenial Parameterization on Optimal Treatment Regime

Supervised by Prof. Thomas Richardson *June 2019 – Jul 2021*

- Developed a novel model by fusing two ideas of optimal treatment regime and multiplication effect modelling.
- Implemented the model with simulation and real data with 2500+ lines of R code.

Adaptive Robot-Assisted Feeding

Prof. Siddhartha Srinivasa's Personal Robotics Lab *June 2019 – Sep 2019*

- Formulated the online learning problem using contextual bandit algorithms and developed 1000+ line (excluding changes) of Python scripts to implement algorithms
- Proved the robustness of algorithms by integrating them with the real-world dataset.
- Demonstrated usability of algorithms by designing and conducting experiments on the real robot.

Risk Management Institute, NUS *January 2018 – March 2018*

Undergraduate Research Assistant

- Enhanced the BuDA (bottom-up default analysis) program and facilitated the implementation of the forward-intensity model.
- Collaborated the migration of the parameter estimation process from Matlab to Julia with 300+ lines coding.

Software & Methodologies

- Linbo Wang, **Xiang Meng**, Thomas Richardson, James Robins. Methodology of "Coherent modeling of longitudinal causal effects on binary outcomes". *Harvard Dataverse, https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/UZAI96&faces-redirect=true*
- **Xiang Meng** and Jonathan Huang. "REFINE2: A tool to evaluate real-world performance of machine-learning based effect estimators for molecular and clinical studies". *Github, https://github.com/mengeks/drml-plasmode*

Selected Coursework

Machine Learning and Statistics
- Advanced Machine Learning (including a deep learning project in computer vision); Reinforcement Learning and Bandits
- 3 courses in causal inference

Finance
- Corporate Finance; Financial Markets; Mathematical Finance I & II; Financial Modelling and Computation
- Time Series; Stochastic Processes

Computer Science
- Data Structures and Algorithms I & II; Database Systems; Computer Organization

Leadership & Volunteering

Harvard Chinese Student and Scholars Association (HCSSA) *Sep 2021 – Present*

Co-chair / Member of Seminar Deparment
- Organized and supervised 7 seminars to give industry and academia exposure to Chinese graduate students across art and science, industryand academia**.**
- Improved the in-person attendance by **4x** in one semester after COVID.
- Streamlined work procedure, venue recommendation, speaker contacts, poster making to ease future use.
- **Selected guests:** Lei Liang, Musician, awardee of the Guggenheim award (the Nobel prize in music); Xiao-Li Meng, former Harvard GSAS Dean; Christina You: Representative in China, Gagosian Gallery

King Edward VII (KEVII) Chinese Drama *October 2014 – May 2016*

Head of Public Relations / Assistant Production Manager
- Staged two performances in different roles; led sub-committee of 14 and acted as junior leader for committee of 45.
- Managed whole sales process for c. 1k tickets and handled total revenue over US$7800; secured sponsorship over US$5900.

NUS Volunteer Action Committee *January 2016 – April 2016*

Volunteer
- Directed 8 lunch and shopping sessions for over 20 physically and mentally challenged elderly people; organized 2 social outings.

Teaching Experience

STAT 303: The Art of Teaching in Statistics *Aug 2022 – May 2023*

STAT 117: Data Analysis in Modern Biostatistics (Biomarker and Cancer Research) *Jan 2022 – May 2022*

STAT 110: Probability *Sep 2021 – Dec 2021*

CS1010S: Programming Methodology in Python *Aug. 2015 – May 2016, Jan. 2018 – May 2018*

Technical Competencies & Interests

Languages: Chinese (Native), English and Japanese (Proficient in writing, speaking, reading, listening)
Interests: Music (vocal and guitar; gave **~12 band** performances), **Acting** (gave 3 theater performances and 3 stand-up comedy and crosstalk performances)
Programming & IT: Python, SQL, R, SAS, SPSS, C++, Unix, Java, VBA, Matlab; Microsoft Excel/Word/PowerPoint, Adobe Suite
Interests and student groups: : Music (vocal and guitar; gave ~12 band performances), Acting (gave 3 theater performances and 3 stand-up comedy and crosstalk performances)

Publications & Preprints

[1] **Meng X**., Dempsey W., Liao P., Reid N., Klasnja P., Murphy S. (2023+). A Novel Evaluation of a Just-in-Time Adaptive Intervention Algorithm. In preparation.

[2] Wang L., **Meng X**., Richardson T., Robins J. (2022). Coherent modeling of longitudinal causal effects on binary outcomes. *Biometrics. 2022 May 4. doi: 10.1111/biom.13687.*

[3] **Meng X.**, Huang, J. (2021). Doubly robust, machine learning effect estimation in real-world clinical sciences: A practical evaluation of performance in molecular epidemiology cohort settings. *arXiv: 2105.13148*

[4] Gordon E., **Meng X.,** Barnes M., Bhattacharjee T., & Srinivasa, S. (2019). Adaptive Robot-Assisted Feeding: An Online Learning Framework for Acquiring Previously Unseen Food Items. *International Conference on Intelligent Robots and Systems, Las Vegas, US, 2020*

[5] Gordon E., **Meng X.,** Barnes M., Bhattacharjee T., & Srinivasa, S. (2019). Learning from failures in robot-assisted feeding: Using online learning to develop manipulation strategies for bite acquisition. *IJCAI 2019 Workshop on AI × Food.*

[6] **Meng X.** (2018). Dynamic Mean-Variance Portfolio Selection. *Undergraduate Thesis. arXiv:1907.03093*

Presentations

[8] An Algorithm to Determine Treatment Timing in Mobile Health: Potential, Design and Evaluation. *14th CMStatistics, Advances in statistical methods for mobile health, Dec 202*

[7] Assessing Uniformity in Sampling of Sedentary Times. *3rd Harvard Health Data Science Symposium, Nov 2021.*

[6] Assessing Uniformity in Sampling of Sedentary Times. *Joint Statistical Meeting (JSM), Aug 2021.*

[5] Causal Questions in Micro-Randomized Trials (MRTs): Introduction and Challenges. *Society for Causal Inference (SCI) Causal Inference for Social Impact, Jun 2021.*

[4] The Central Role of Propensity Score in Causal Inference. *Harvard Statistics Seminar Summer 2020.*

[3] A Congenial Parameterization on Optimal Treatment Regime. *UW Causal Inference Working Group Fall 2019.*

[2] Learning from failures in robot-assisted feeding: Using online learning to develop manipulation strategies for bite acquisition (with Gordon E.). *IJCAI 2019 Workshop on AI×Food, Poster and Oral Presentation.*

[1] Transparent Parametrizations of Models for Potential Outcomes. *UW Causal Inference Working Group Spring 2019.*