Muyan Jiang

+1 (341) 333-8405 | muyan_jiang@berkeley.edu | LinkedIn | GitHub | Google Scholar | Personal Website

Education

University of California, Berkeley — Berkeley, USA
PhD in Industrial Engineering & Operations Research — GPA: 3.91/4.0 — *Aug. 2022 – May 2027*
with Designated Emphasis in Computational Precision Health

New York University, Abu Dhabi — Abu Dhabi, UAE
Bachelor of Science in Mathematics, Computer Science — GPA: 3.97/4.0 — *Aug. 2018 – May 2022*

Relevant Courses: Mathematical Programming I/II, Stochastic Analysis, Scientific Computing, Deep Learning, NLP, Algo for Data Sci, SWE, Logistic Management, PDE, Complex Analysis, Algebra I/II, Advanced Stats, Topology

Internships and Research

Wells Fargo's Centers of Excellence (AI/ML COE) — June 2024 – Aug. 2024
Quantitative Analytics Intern — *Charlotte, USA*

- Developed and fine-tuned large language models (LLMs) to automate credit memo generation processes for commercial banking, enhancing efficiency and accuracy in document preparation.
- Designed and implemented a comprehensive evaluation framework tailored for financial summary analysis, utilizing unit testing and LLM-as-a-validator methodologies to ensure the robustness and reliability of the models.

Microsoft's Software Technology Center of Asia — June 2021 – Aug. 2021
Software Engineering Intern — *Suzhou, China*

- Developed a sport news multilabeling model for Bing's downstream ranking system, for use during Tokyo Olympics, using graphical knowledge databases and structured neural networks with 100ms latency and 90%+ accuracy

Optimal Contract Design for End-of-Life Care Payments — Sept. 2023 – Apr. 2024
Researcher — *Berkeley, USA*

- Developed a principal-agent model to design optimal contracts for end-of-life care, using bilevel optimization techniques to align provider incentives with patient outcomes and cost-efficiency.
- Performed simulations with real-world data to apply the derived contracts to pricing intracranial pressure monitoring for traumatic brain injuries, demonstrating cost savings and improved care quality.

Interpretable Semiparametric Regression for Treatment-Covariates Interaction — Jan. 2023 – Jan. 2024
Researcher — *Berkeley, USA*

- Developed an interpretable semiparametric regression model using a dual-score system to estimate optimal individualized treatment strategies, focusing on the interaction between covariates and continuous treatments.
- Applied the model to a 6000-patient anticoagulant study, achieving SOTA results in treatment optimization and providing clinical insights on dosing strategies, leveraging patient-specific data and pharmacogenetic variables.

Covid-19 Epidemiological Research — May 2020 – Apr. 2021
Researcher — *Abu Dhabi, UAE*

- Simulated COVID-19 pandemic using the SEIR-model to suggest an optimal policy for schools to balance trade-offs between in-person classes and the spread of the virus, with tools from Mathematica and MatLab
- Published a paper in *Scientific Report* on the eluding effect of school opening that mathematically explained the ambiguous role of school opening policy during the COVID-19 outbreak and the existence of a phase transition

Covid-19 Literature Classification with Termolator — Dec. 2020 – May 2021
Researcher — *Abu Dhabi, UAE*

- Developed a tailoring COVID-19 document classification algorithm with a novel termolator technique and boosted F1 Micro measure to 80% with SVC on squared hinge loss
- Published and presented report at the 2021 IEEE MIT Undergraduate Research Technology Conference

Matrix Analysis — May 2020 – Present
Undergraduate Researcher — *Abu Dhabi, UAE*

- Developed methods to compute numerical range generating polynomials for low-dimensional reciprocal matrices using Mathematica, and extended these findings to matrices of arbitrary dimensions.
- Established criteria for the ellipticity of the numerical range through the computation of the Kippenhahn curve, providing a unified heuristic approach for this analysis.

Lie Algebra — Jan. 2019 – Apr. 2020
Summer Undergraduate Researcher — *Abu Dhabi, UAE*

- Studied double extensions of restricted Hamiltonian Lie superalgebras preserving the non-degenerate closed 2-forms in characteristic p with non-constant coefficients.
- Computed filtered deforms of exceptional (Skryabin) modular Lie algebras over algebraically closed fields of characteristic 3 in the restricted case, using "SuperLie" package from Mathematica and Python.

Publications

M. Jiang, Y. Zhang, and A. Aswani, "Interpretable semiparametric regression for treatment-covariates interaction learning: A dual-score system," 2024
M. Jiang, Y. Chen, X. Chen, J. Lavaei, and A. Aswani, "Optimal contract design for end-of-life care payments," 2024
M. Jiang and I. M. Spitkovsky, "On some reciprocal matrices with elliptical components of their kippenhahn curves," *Special Matrices*, vol. 10, no. 1, pp. 117–130, 2022
M. Jiang, R. Fan, and O. Hussein, "Document classification with termolator for covid-19 literature," in *2021 IEEE MIT Undergraduate Research Technology Conference (URTC)*, pp. 1–5, 2021
A. Gandolfi, A. Aspri, E. Beretta, K. Jamshad, and **M. Jiang**, "A new threshold reveals the uncertainty about the effect of school opening on diffusion of covid-19," *Scientific Reports*, vol. 12, p. 3012, Feb 2022
M. Jiang and I. M. Spitkovsky, "Numerical ranges of foguel operators revisited," *Operators and Matrices*, 2023
K. Dharmarajan, W. Panitch, **M. Jiang**, K. Srinivas, B. Shi, Y. Avigal, H. Huang, T. Low, D. Fer, and K. Goldberg, "Automating vascular shunt insertion with the dvrk surgical robot," *IEEE International Conference on Robotics and Automation (ICRA)*, 2023

Conference Talks

M. Jiang, "*Optimal Contract Design for End-of-Life Care Payments.*" 2024 INFORMS Annual Meeting, Advance Payment Model for Health
M. Jiang, "*Unified approach to reciprocal matrices with Kippenhahn curves containing elliptical components.*" International Workshop on Operator Theory and is Applications (IWOTA 2024)
M. Jiang, "*Numerical Ranges of Reciprocal Matrices.*" International Workshop on Operator Theory and is Applications (IWOTA 2023)
M. Jiang, "*Numerical ranges of Foguel operators revisited.*" ILAS Special Session on Matrices and Operators, 2023 Joint Mathematics Meetings (JMM)
M. Jiang, "*Document Classification with Termolator for COVID-19 Literature.*" 2021 IEEE MIT Undergraduate Research Technology Conference (URTC)
M. Jiang, "*Kippenhahn Curves of Some Reciprocal Matrices.*" 2021 Joint Mathematics Meetings (JMM)

Academic Service

INFORMS Annual Meeting 2024 Oct 20, 2024 – Oct 23, 2024
Session Co-Chair, Invited Session TA47 - Advance Payment Model for Health *Seattle, USA*

- Co-chaired an invited session within the Health Applications Society cluster, focusing on advanced payment models for healthcare.

Conference on Decision and Control 2024 Dec 16, 2024 – Dec 19, 2024
Session Chair & Reviewer, Regular Session TuB07 - Game Theory IV *Milan, Italy*

- Chaired a session on Game Theory, facilitating discussions on the latest research and advancements in the field.
- Reviewed two papers, providing constructive feedback to enhance the quality of research presented.

Miscellaneous Projects

China-Gulf Forum: Opportunities and Challenges Jan. 2019 – Present
Co-founder *UAE/China*

- Founded the first student-organized multidisciplinary conference in the UAE that aims to address the changing multilateral relationship between China and the Gulf region
- Hosted annual forums for three years and invited international and local leaders including former UN special representative Bernardino León, and Chairwoman of UAE COVID-19 Management Committee Nawal Al Kaabi

Aunties Assemble Sept. 2020 – Jan. 2021
Project Manager / Developer *Abu Dhabi, UAE*

- Developed and tested a peer-to-peer public food ordering platform for unemployed expats in the MENA area
- Implemented back end database with MongoDB Atlas, front end with JavaScript, HTML, and CSS

Academy of Philosophy Sept 2020 – Present
Co-founder *Shanghai, China*

- Co-founded a student civil discourse to engage philosophy lovers from college to Ph.D. students in China.
- Held the first in-person philosophy salon with in Shanghai with prestigious philosophy scholars and 20+ audiences.

Chongqing Youth Football Union July 2020 – Present
Co-chair *Chongqing, China*

- Lead a youth football union that promotes football welfare and encourages teenagers engagement.
- Hosted the Graduation Cup in 2020, 2021, 2022 with 40+ teams, 10+ local sponsors, and 20,000+ live-stream views.

Teaching Experience

UC Berkeley: *INDENG 240 - Optimization Analytics, Fall 2024.* (Graduate Student Instructor)

UC Berkeley: *INDENG 256 - Healthcare Analytics, Spring 2024.* (Graduate Student Instructor)

UC Berkeley: *INDENG 172 - Probability and Risk Analysis for Engineers, Fall 2023.* (Graduate Student Instructor)

New York University: *CSCI-UA.0480 - Natural Language Processing, Fall 2021.* (Teaching Assistant)

Technical Skills

Languages: Python, C/C++, C#, Scope, R, JavaScript, HTML/CSS, Mathematica, MatLab
Developer Tools: Google Cloud Platform, VS Code, Jupyter Notebooks, PySpark
Libraries: Pytorch, Keras, pandas, scipy, sklearn, NLTK, BeautifulSoup, seaborn