

Jingyuan Chen

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Education

University of Illinois Urbana-Champaign **2025 – Present**

PhD Information Science, Statistics Minor 4.0 Cumulative-GPA

MS Mathematics *Computational Science & Engineering Concentration*

Advisor: Matt Turk PhD (iSchool, Astro, National Center for Supercomputing Applications)

University of California, Berkeley (College of Letters & Science, College of Computing) 2022 – 2025

BA Mathematics, Honors *Computational Geometry Concentration* 3.7 Upper Division Major GPA

BA Statistics, Honors 3.9 Upper Division Major GPA

Interests & Select Coursework:

[1] **Automated Deduction & Verification:** CS 576 Proof Assistants* (A+), CS 598 TR Build Your Own Proof Assistant* (IP), CS 591 BAI Biologically Plausible AI* (IP)

[2] **Applications of Free Probability & Random Matrices:** STAT 578 Spectral Methods, Statistical Network Analysis & Nonconvex Optimization* (A), MATH 223B Eigenvalues of Random Matrices[^] (A), MATH 595 Rep Theory for Quantum Info Theory* (A), STAT 205A Measures & Probability[^] (A)

[3] **Risk Modelling & Theory:** ECON 217 Risk Theory (P)[^], ECON 157 Actuarial Economics (A+)[^]

Grants, Awards & Scholarships

Office of Undergraduate Research Fellowship[^] (2025), Industrial Engineering & Operations Research Teaching Award[^] (2025), Instructional Technology & Innovation Grant[^] (2025), Physics L&S Big Ideas Grant (2024)[^]. *Total awarded (PhD stipends not counted): 39,750 USD (12,750 USD personal)*

Industry Experience

Summer Quantitative Risk Researcher **New York City, NY**

Bloomberg L.P. Quantitative Risk Analytics Group (Product Engineering Team) Summer 2026
Building risk tools and models for clients. Researched and developed new multi-asset risk aggregation and allocation models. Developing and updating credit, climate, market, and liquidity risk related models.

Data Science Intern & Statistical Consultant (Berkeley CDSS Discovery) **Foster City, CA**

Gilead Sciences (Manager: Ethan Yen, Head of Risk Analytics) Fall 2024 - Spring 2025
Detected anomalous & erroneous spending in a 2.2 million row general ledger with custom GARCH & inference trees. Advised Gilead's Head of Audit to inspect specific cost centers for manual auditing, being implemented in the 2025 FY.

Investment Banking Summer Analyst **Beijing, China**

ING Group N.V. (Managers: Sunny Chen, Jimmy Zhang Director Corporate Clients) Summer 2023
Conducted Systematic Integrity Risk Analysis on Chinese EV OEM expansion in foreign markets & withdrawal from the Russian market. Presented findings to regional MDs in both Mandarin & English.

Research Fellowships

[1] “Applications of Graphons on Neural Networks” Department of Statistics[^] and Department of Mathematics[^] (Advisor: Professor Steve Evans, Summer 2025)

[^]University of California, Berkeley

*University of Illinois Urbana-Champaign

- [2] “High Dimensional Factor Counting” Consortium for Data Analytics and Risk, Department of Economics & BlackRock Aperio (PI: Professor Lisa Goldberg, Fall 2024 – Present)

Ongoing Research & Projects

- [1] Lyapunov Spectrum Estimation in Chaotic Recurrent Neural Networks via Free Probability [WIP-Project] with Prof. Rainer Engelken, UIUC ECE Spring 2026 - Current
- [2] “Nice Geo” Building an easy to use typechecker kernel for a proof system based on the formal System E (Euclid’s Elements) [WIP-Project] (with the UIUC CS PL/FM/SE Group under Prof. Talia Ringer)*
- [3] “ProofVis: A Lean Proof Tree Visualizer” Technical Project Manager for Integration [WIP-Project]: integrating the produced trees with the Lean ecosystem, namely displaying it in the Lean infoview (with the UIUC CS PL/FM/SE Group under Prof. Talia Ringer)*
- [4] “Neural Network Information Bottleneck Analysis using Graphons” [WIP-Paper] with Siddhi Mishra; PhD candidate @ UCF IEMS, Professor Jerry Shen @ St George’s CS*^

Papers & Presentations

- [1] “ReLay: Beyond One-Size-Fits-All Plain-Language Summaries through the Lens of Lay People” J. Chan, Y. Han, **J.Chen**, S. Fang, L. D. Gryboski, A. Lee, S. Tanna, Q. Zhu, Z. Lu, L. Wang, Y. Guo [Conference Paper COLM 2026]*
- [2] “MedConceal: A Benchmark for Clinical Hidden-Concern Reasoning Under Partial Observability” Y. Han, J. Chan, M. Ai, **J. Chen**, S. Du, Y. Guo [Conference Paper COLM 2026]*
- [3] “A Review of Information Retrieval System and User Behavior in Modern Computer Assisted Interactive Theorem Proving” [Literature Review Prepared for IS509]*
- [5] “What Learning Theory Can Learn from Random Matrices (and Random Matrices from Operator Algebras)” [Presentation] 12/2025 UIUC Statistics 578*
- [6] “Random Matrices, Free Probability and The Weingarten Calculus for Quantum Information Theory” [Presentation] 12/2025, UIUC Rep Theory for Math*
- [7] “Fast Low-Rank Up and Downdate Eigenvector Updates for High-Dimensional Covariance Matrices” [Poster] **J. Chen** & K. Xie (12/2024). Advanced Matrix Computations, SLICE Lab Dept of EECS^
- [8] “STAT 2: The History, Role and Future of Introductory Statistical Literacy Courses at UC Berkeley” [Honors Thesis, supervised by Professor Andrew Bray, Berkeley Statistics 2025]^
- [9] “Empirical Findings on Spectral Properties of Return Covariance Matrices” [Presentation] **J. Chen** & D. Yao (12/2024, 3/2025 @ FSU, UCSB, UC Berkeley & UConn Joint Risk Seminar), CDAR^
- [10] “Three Manifold Distance Metrics for Multifactor JSE” [Presentation] **J. Chen** & D. Yao (12/2024, 3/2025 @ FSU, UCSB, UC Berkeley & UConn Joint Risk Seminar), CDAR^

Research Assistantships

- [1] “Effect of short-term liquidity availability in Earned Wage Access tech” (Professor Cefala, Haas SB)^ *Built MATLAB backward induction and forward iteration program on a 13-parameter system across 500,000 state points per period.*
- [2] “Responsibility Targeting Shapes Collective Moral Judgment” (Professor Davenport, Goldman SPP)^ *Statistical investigation of empirical experiments, developed formalized mathematical framework.*
- [3] “The Rise of Anti-Activist Poison Pills” (Professor Eldar, Berkeley School of Law, Dept of Econ)^ *Building the first dataset of Net Operating Loss figures in 10Ks using ML and statistical classification. Contributed towards Professor Eldar’s National Bureau of Economic funded Research Project.*

^University of California, Berkeley

*University of Illinois Urbana-Champaign

Workshops & Summer Schools:

Carnegie Mellon University/CNA-RTG: “PDEs & Probability Research Training Group” (Invited)	2026
Carnegie Mellon University/NSF-ICARM: “Formalization Mathematics Summer School” (Invited)	2026
University of Michigan Ann Arbor: “Random Matrix Theory Summer School” (Invited)	2026
Simons Theory of Computing “Bridging Prediction and Intervention Problems in Social Systems”	2026
AMS Joint Mathematics Meeting	2026
Office of Data Science Research Data Science Education Workshop*	2025

Instructorships

Kids Teach Tech / Urban League GSFB ML Summer Camp (Hired by Berkeley IEOR)	Summer 2025
MUSA 74: Intro to Proof Writing for Upper-Div Math (DeCal)^	Fall 2024

Teaching Assistantships

<i>Fall 2025: Feedback on the Learning Experience Survey Teaching Effectiveness</i>	4.5/5.0
IS 203: Discrete Mathematics and Probability for Information Problems*	Spring 2026
IS 445: Data Visualization*	Fall 2025
MATH 113: Abstract Algebra^	Summer 2025
MATH 105: Multivariate Real Analysis & Measures^	Spring 2025
MATH 16B, MATH 53: Multivariate & Vector Calculus ^	Summer 2024
STAT 2, STAT 20: Introduction to Statistics^	Spring 2024 - 2025

Pedagogy Training: INFO 590 College Teaching* (A), Graduate Academy for College Teaching*, STAT 375: Teaching of Probability and Statistics^ (P), CITL College Teaching Certificate* (IP), Master Course in Online Teaching* (IP), Graduate Minor in College Teaching* (IP)

Course Development

- [1] MATH 56: Linear Algebra @ University of California, Berkeley
“Interactive Tools for Learning Linear Algebra” tools for students learning vector operations. Funded by Instructional Technology & Innovation grant. Prototype: [linalg-app.vercel.app](#)
- [2] LS 22: Sense & Sensibility & Science @ University of California, Berkeley
Data science labs focused on “bad science”. Supervised by Nobel Physics Laureate Professor Perlmutter. Part of the “Human and Social Dynamics of Data and Technology” course requirement.
- [3] ECON 148: Data Science for Economists @ University of California, Berkeley
Created forecasting and time series labs based off of Meta’s Prophet package. Created as part of the CDSS Data Modules Team.

Math Contests & Olympiads

Mathematical Association of America: USAMO, JMO & Putnam Grader*	2026 - Present
Intercollegiate Math Tournament 501(c)(3): Head Test Writer & Marketing Director*	2025 - Present
Berkeley Math Tournament 501(c)(3): Problem Writer, Recruiting & Marketing Director^	2022 - 2024
Stanford Math Tournament: Grader & Proctor^	2022 - 2024
ASDAN Math Tournament China: Advisor & Grader	2023
Mustang Math Tournament: Advisor, Grader & Proctor^	2023
Math League: Grader & Proctor^	2022

Skills & Other Coursework:

^ University of California, Berkeley

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Scripting: FORTRAN, Julia, Python, R, Java, Lisp, MATLAB/Octave, Mathematica, TypeScript, Ruby
Languages: Native: English, Mandarin Chinese; Elementary: Arabic, Spanish, French
Licenses & Certifications: CITI Core IRB Training & Course in the Protection of Human Subjects*, Office of the Registrar FERPA Training*

UIUC Graduate Division: MATH 595QL Quantum Learning Theory (IP), MATH 586 Algebraic Combinatorics (IP), MATH 503 Geometric Group Theory (IP), CSE 510 Numerical PDEs (IP), CS 591BA Biologically Plausible AI (IP), IS 517 Research Methods (IP), IS 509 History of Information (A), TE 556 Finance Engineering Management (A)

UC Berkeley Graduate Division: MATH 250A Abstract Algebra (A+), MATH 221 Advanced Matrix Computations (A), STAT 210A Theoretical Statistics (A-), STAT 244 High Powered Computing for Statistics and Data Science with Julia (A-), ECON 217 Graduate Risk Seminar (P)

UC Berkeley Undergraduate Upper-Division: MATH 130 Matroid Theory (A), MATH 104 Real Analysis (A), MATH 105 Multivariate Real Analysis (A), STAT 158 Experimental Design (A), STAT 165 Forecasting (A), CS 169A Software Engineering (A), STAT 33B Advanced R Programming (A), ECON 157 Actuarial Economics (A+), ECON 110 Game Theory (A-), STAT H195 Honors Thesis (A)

Organizations & Service:

AFT/IFT Local 6300 (GEO): Member at Large*	2025 - Present
UIUC iSchool Research Showcase: Adjudicator*	Fall 2025
Academic Program Review: PhD Representative*	Fall 2025
Mathematics Undergraduate Student Association RSO: Officer at Large^	2023 - 2025
UAW 2865: Member at Large, Contract Action Team^	2023-2025
Department of Mathematics Grievance Committee: Voting Student Member^	2024 - 2025
MPS Launch Day: Department of Mathematics Representative^	Fall 2024
CDSS Cal Day: Department of Statistics Representative^	Fall 2024
Inaugural CDSS Statistics Golden Bear Orientation: Panelist Speaker^	Fall 2024
Mathematics Undergraduate Town-hall: Moderator^	Spring 2024
Berkeley Connect MATH 98BC: Panelist Speaker^	Spring 2023
Cal Student Philanthropy: Student Ambassador^	2022 - 2023

Clubs & External Organizations

Pioneer Academics @ Oberlin College Advisory Board: Member at Large	2024 - Present
Kids Teach Tech + Urban League of Greater San Francisco Bay Area: Camp Instructor^	Summer 2025
Space Technologies and Rocketry RSO: Operations & Finance Lead, Avionics Engineer^	2022 - 2024
Open Computing Facility: Volunteer Staff^	2022 - 2023

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