

# Fangyuan Lin

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## EDUCATION

University of California, Berkeley

May. 2020 – Aug. 2024

*B.A. in Mathematics and Computer Science (GPA: 3.953/4)*

Berkeley, CA

- **Dorothea Klumpke Roberts Prize in Mathematics:** “awarded to seniors who have demonstrated truly exceptional scholarship in mathematics, with a cash prize.” [\[link\]](#)
- **Highest Honors in Mathematics**
- **Outstanding Undergraduate Student Instructor Award** [\[link\]](#)

## RESEARCH EXPERIENCE

Research Assistant

Aug. 2024 – Present

*Research Assistant to Professor Steven N. Evans (UC Berkeley)*

Berkeley, CA

- Developed programs to identify non-isomorphic simple edge-weighted trees with the same joint distribution of the random length vector, extending the work *Recovering a Tree from the Lengths of Subtrees Spanned by a Randomly Chosen Sequence of Leaves* by Professor Steven N. Evans.
- Contributing to ongoing theoretical research in stochastic processes, focusing on extending the assumptions of mean-field interacting multi-type birth-death processes.

**Revisiting the Unicity Distance through a Channel Transmission Perspective**

May. 2024 – Oct. 2024

*Independent project supervised by Professor Per-Olof Persson (UC Berkeley)*

Berkeley, CA

- Designed and implemented algorithms to break simple substitution ciphers using frequency analysis, Markov chain Monte Carlo, and machine learning, under the supervision of Professor Persson. [\[code\]](#)
- Studied the expected lower bound on message length required for feasible attacks from an information-theoretic approach and presented a novel proof of the unicity distance formula using reliable communication theory, under the supervision of Professor Steven N. Evans. [\[paper\]](#)

**When is a function of a Markov process Markov?**

May 2023 – Aug. 2023

*Summer Undergraduate Research Fellowship (UC Berkeley)*

Berkeley, CA

- Supervised by Professor Steven N. Evans (UC Berkeley) on literature review of aggregated Markov processes and stochastic learning theory and received a stipend of \$5000 as part of the Summer Undergraduate Research Fellowship.
- Presented novel applications of classical results on aggregated Markov processes to substantiate the Markovian properties of models within stochastic learning theory. [\[paper\]](#)

## ACADEMIC AWARDS AND SCHOLARSHIPS

Dorothea Klumpke Roberts Prize in Mathematics, 2023-24 [\[link\]](#);

*Department of Mathematics, UC Berkeley*

Highest Honors in Mathematics, 2023-24;

*Department of Mathematics, UC Berkeley*

Outstanding (Under)Graduate Student Instructor Award, 2023-24 [\[link\]](#);

*The Graduate Division, UC Berkeley*

High Distinction in General Scholarship 2023-24;

*College of Letters and Science, UC Berkeley*

High Distinction in General Scholarship 2023-24;

*Clg of Comp Data Sci & Society, UC Berkeley*

Summer Undergraduate Research Fellowship (\$5,000 USD), 2023 [\[link\]](#);

*UC Berkeley*

## TEACHING EXPERIENCE

**MATH 54: Linear Algebra & Differential Equations**

Jan 2024 – May 2024

*Teaching Assistant for Professor Zvezdelina Stankova (UC Berkeley)*

Berkeley, CA

- Taught 6 discussion sections per week and held 2 office hours, managing grading, proctoring, and administrative duties for a class of 56 students.
- Received positive feedback in official course evaluations and recognized as an outstanding undergraduate student instructor. [\[Teaching Evaluation\]](#)

**MATH 1B: Calculus**

Aug 2023 – Dec 2023

*Teaching Assistant for Dr. Norman Sheu (UC Berkeley)*

Berkeley, CA

- Taught 6 discussion sections per week and held 2 office hours, managing grading, proctoring, and worksheet creation for a class of 48 students.
- Received positive feedback in official course evaluations and recognized as an outstanding undergraduate student instructor. [\[Teaching Evaluation\]](#)

OTHER EMPLOYMENT HISTORY

<b>MATH 104: Introduction to Analysis</b> <i>Reader for Dr. Norman Sheu (UC Berkeley)</i> <ul style="list-style-type: none"><li>Composed detailed grading rubrics and prepared comprehensive exam solutions.</li><li>Graded homework assignments and exams with a focus on consistency and fairness.</li></ul>	Jun 2023 – Aug 2023 Berkeley, CA
<b>MATH 160: History of Mathematics</b> <i>Reader for Professor Ole H. Hald (UC Berkeley)</i> <ul style="list-style-type: none"><li>Assisted with grading assignments and supported administrative tasks for the course.</li></ul>	Jan 2023 – May 2023 Berkeley, CA
<b>Mathematics &amp; Statistics Tutor</b> <i>Student Learning Center, UC Berkeley</i> <ul style="list-style-type: none"><li>Provided tutoring and academic advising for courses including MATH 1A&amp;B Calculus, MATH 54 Linear Algebra &amp; Differential Equations, and MATH 55 Discrete Mathematics.</li><li>Conducted 7 hours of tutoring per week, helping students grasp complex mathematical concepts, solve problems, and prepare for exams.</li></ul>	Jun 2021 – Aug 2022 Berkeley, CA

DIRECTED READING

<b>Graduate-Level Information Theory</b> <i>Supervisor: Professor Steven N. Evans (UC Berkeley)</i> <ul style="list-style-type: none"><li>Studied the classical text <i>Elements of Information Theory</i> by Joy A. Thomas and Thomas M. Cover and participated in weekly one-hour discussions with Professor Evans.</li><li>Produced comprehensive notes and problem set solutions. <a href="#">[LaTeX Source Code]</a></li></ul>	May 2024 – Aug 2024 Berkeley, CA
<b>Graduate-Level Differential Geometry</b> <i>Supervisor: Dr. Norman Sheu (UC Berkeley)</i> <ul style="list-style-type: none"><li>Studied <i>Introduction to Manifolds</i> by Loring W. Tu and participated in weekly half-hour discussions with Dr. Sheu.</li><li>Developed detailed notes. The source code is available here: <a href="#">[LaTeX Source Code]</a></li></ul>	May 2024 – Present Berkeley, CA

TECHNICAL COURSEWORK (UC Berkeley, 2020–2024)

**Mathematics:** MATH 53 *Multivariable Calculus* (A), MATH 54 *Linear Algebra and ODE* (A+), MATH 55 *Discrete Math* (A), MATH 74 *Intro to Upper-Div Math* (A+), MATH 104 *Real Analysis* (A), MATH 106 *Probability Theory* (A+), MATH 110 *Abstract Linear Algebra* (A+), MATH 113 *Abstract Algebra* (A), MATH 115 *Number Theory* (A-), MATH 124 *Programming in Math* (A+), MATH 128A *Numerical Analysis* (A+), MATH 135 *Set Theory* (A), MATH 141 *Differential Topology* (A-), MATH 142 *Algebraic Topology* (A), MATH 160 *Math History* (A), MATH 185 *Complex Analysis* (A+), MATH 196 *Honors Thesis* (A), MATH 199 *Independent Study*, MATH 202A *Graduate Analysis* (A-), MATH 205 *Graduate Complex Analysis* (A)

**Other Technical Courses:** STAT 150 *Stochastic Processes* (A), CS 61A *Program Structures* (A), CS 61B *Data Structures* (A), CS 161 *Computer Security* (A), CS 171 *Cryptography* (A), CS 188 *Artificial Intelligence* (A+), EECS 126 *Probability & Random Processes* (A), EECS 127 *Convex Optimization* (A), PHYSICS 7A *Mechanics* (A), PHYSICS 7B *Heat & Electricity* (A)

SKILLS & MISC.

• <i>Language</i>	English (professional), Mandarin (native)
• <i>Programming</i>	C, Golang, Java, Matlab, Julia, Mathematica, Python, Scheme, SQL
• <i>Tools</i>	L <sup>A</sup> T <sub>E</sub> X, Anaconda, Git, Abode Illustrator.
• <i>Hobbies</i>	Violin, piano, running, bodybuilding, <i>etc.</i>