FANGYUAN LIN

Email: fangyuan@berkeley.edu Phone: +1-341-333-8957 Address: 2338 Telegraph Ave, Berkeley CA 94704

EDUCATION

University of California, Berkeley

Bachelor of Arts, Majors: **Mathematics** and **Computer Science (GPA: 3.953/4.000)** **Aug 2020 – Aug 2024**

- ***Dorothea Klumpke Roberts Prize in Mathematics:*** "awarded to seniors who have demonstrated truly exceptional scholarship in mathematics, with a cash prize." (link)
- ***Highest honor in Mathematics, Phi Beta Kappa Honor Society,***
- ***Outstanding Undergraduate Student Instructor*** **(**link)

PROGRAMMING SKILLS

Github: https://github.com/FangyuanLinGoBears2024

Programming Languages: C, Golang, Java, Julia, Mathematica, MATLAB, Python, Scheme, and SQL

TEACHING

University of California, Berkeley, Department of Mathematics

Teaching Assistant (MATH 54 Linear Algebra & Differential Equations) **Jan 2024 – May 2024**

Teaching Assistant (MATH 1B Calculus) **Aug 2023 – Dec 2023**

- Received the ***2024 Outstanding Undergraduate Student Instructor Award***.
- Conducted teaching (MATH 54, MATH 1B), grading, and proctoring duties.
- Held regular office hours and collaborated with the instructor to enhance course delivery.
- Received positive feedback from the MATH54 official teaching evaluation and MATH 1B official teaching evaluation.

RESEARCH EXPERIENCE

University of California, Berkeley

- **Frequency Analysis Attack and Lower Bound on Message Length** **May 2024 - Aug 2024**
  - https://github.com/FangyuanLinGoBears2024/Frequency-Analysis
  - Supervised by Professor Per-Olof Persson as my mentor for MATH 199 Independent Study.
  - Writing and experimenting with algorithms to break substitution cipher using methods of frequency analysis, Markov chain monte carlo, and machine learning.
  - Studying the lower bounds on the message length necessary for the attack to be feasible from an information theorist approach.
  - LaTex Source Code of the paper: https://www.overleaf.com/read/fdcncqnzsbsq#6e1c65
- **Summer Undergraduate Research Fellowships (SURF) Recipient** **May 2023 – Aug 2023**
  - Awarded the Summer Undergraduate Research Fellowships (SURF) for research proposal, "*When is a function of a Markov process Markov?*" under the supervision of Professor Steven N. Evans, *Department of Mathematics and Department of Statistics, University of California, Berkeley*.
  - Received a research stipend of **$5000** as part of SURF.
  - Reviewed weekly assigned papers on the theory of aggregated Markov processes and literature in stochastic learning theory and discussed ideas and proofs with Prof. Evans weekly for an hour.
  - Continued the project as an Honors Thesis course during the following fall semester.
  - Presented findings to the Office of Undergraduate & Research & Scholarships panel on Aug 2, 2023, at the Summer Undergraduate Research Fellowship Presentation.
  - Research Paper: Fangyuan Lin*, Applications of the Theory of Aggregated Markov Processes in Stochastic Learning Theory* (2023): https://arxiv.org/abs/2311.01476

SUPERVISED INDEPENDENT STUDY

University of California, Berkeley, Department of Mathematics

Graduate level Information Theory **May 2024 – Aug 2024**

Supervisor: Professor Steven N. Evans

- Conducted an in-depth study of *Elements of Information Theory*, engaging in weekly one-hour discussions with Professor Evans to deepen understanding of the material.
- Developed comprehensive notes and problem sets, available in LaTeX format here.

OTHER EMPLOYMENT HISTORY

University of California, Berkeley, Department of Mathematics

Reader (MATH 104 Real Analysis) **Jun 2023 – Aug 2023**

Reader (MATH 160 History of Mathematics) **Jan 2023 – May 2023**

- Assisted the instructor of record with grading assignments and exams.
- Composed rubrics and prepared exam solutions.

University of California, Berkeley, Student Learning Center

Summer Teaching Assistant (MATH 32 Precalculus) **June 2022 – Aug 2022**

- Conducted daily one-hour tutorial sessions and held office hours.
- Assisted the instructor with grading assignments and exams.

Mathematics & Statistics Tutor at Student Learning Center **Jun 2021 – Aug 2022**

- Provided academic advising and tutoring for students in MATH 1A&B Calculus, MATH 54 Linear Algebra & Differential Equations, and MATH 55 Discrete Mathematics.
- Tutored for 7 hours per week, focusing on helping students understand complex mathematical concepts, solve problems, and prepare for exams.

LIST OF TECHNICAL COURSES TAKEN

- **Math Classes**: 53 (Multivariable Calculus **A**), 54 (Linear Algebra and ODE **A+**), 55 (Discrete Math **A**), 74 (Intro. to Upper-div Math **A+**), 104 (Real Analysis **A**), 106 (Probability Theory **A+**), 110 (Abstract Linear Algebra **A+**), 113 (Abstract Algebra **A**), 115 (Number Theory **A-**), 124 (Programming in Math **A+**), 128A (Numerical Analysis **A+**), 135 (Set Theory **A**), 141 (Differential Topology **A-**), 142 (Algebraic Topology **A**), 160 (Math History **A**), 185 (Complex Analysis **A+**), 196 (Honors Thesis **A**), 199 (Independent Study), 202A (Graduate Analysis **A-**), 205 (Graduate Complex Analysis **A**)
- **Other Technical Classes**: Statistics 150 (Stochastic Processes **A**), CS 61A (Program **A**) CS 61B (Data Structures **A**), CS 161 (Computer Security **A**), CS 171 (Cryptography **A**), CS 188 (Artificial Intelligence **A+**), EECS 126 (Prob. & Random Proc. **A**), EECS 127 (Convex Optimization **A**), Physics 7A (Mechanics **A**), Physics 7B (Heat & Electricity **A**)