Hans Oberschelp

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Education

Ph.D Mathematics
University of California, Davis
December 15, 2023
Dissertation: Mixing Times of the Swap-or-Not and Overlapping Cycles Shuffles

B.S. Mathematics with Honors
University of California, Davis
June 2018

Teaching Experience

Teaching Assistant, Mathematics Department, UC Davis, September 2018 – December 2023

Instructed two discussion sections each week to undergraduate classes of approximately 40 students. Hosted office hours, tutored students as part of "Calculus Room" tutoring service. Graded examinations.

Average score of **4.1/5** on student evaluations in response to "Please indicate the overall teaching effectiveness of the teaching assistant" from September 2018 to present.

Average score of **4.4/5** on student evaluations in response to "Please indicate the overall teaching effectiveness of the teaching assistant" from September 2021 to present.

Associate Instructor, Mathematics Department, UC Davis, July 2021 – September 2021

Instructor on Record for introductory calculus class of approximately 50 students. Prepared and delivered lectures. Prepared homework assignments. Prepared and proctored examinations. Hosted office hours.

Average score of **4.4/5** on student evaluations in response to "Please indicate the overall teaching effectiveness of the instructor".

COSMOS Teaching Assistant, COSMOS, UC Davis, Summer of 2022 and 2023

Helped instruct students in the mathematics cluster of a STEM summer camp for high school students. Supported students solving problems in a group setting. Provided one-on-one consultation to students preparing their final project for the camp.

Volunteer, M-PACT, Smythe Academy Middle School, October 2017 – March 2020

Led math-oriented activities at a middle school after school program. Worked with other volunteers to design activities. Helped plan and chaperon field trip to UC Davis.

Private Sector Experience

Contract Work in Artificial Intelligence, March 2024 – Present

Tuned neural networks to solve graduate level mathematics problems for clients through Outlier, Mercor, and other intermediaries. Designed mathematical prompts to stump advanced models. Critiqued and corrected model responses. Promoted to trusted Oracle pool at Outlier and assigned supervisory positions on projects due to consistent high-quality work. Supervised model tuners and provided feedback and advice. Vetted quality of data produced by tuners.

Undergraduate Mentorship

DRP (Directed Reading Program), UC Davis, October 2021– June 2023

Led two small reading courses for undergraduate students. Guided students to choose a textbook to read. Set reading goals and met weekly to discuss readings.

2021-2022 School Year Topic: Game Theory
Book: Matt DeVos and Deborah A. Kent. *Game Theory A Playful Introduction*

2022-2023 School Year Topic: Markov Chains
Book: David Asher Levin, Elizabeth Wilmer, and Yuval Peres. *Markov Chains and Mixing Times*

Publications

B. Morris, **H. Oberschelp**. A Probabilistic Proof of the nCPA to CCA Bound
https://arxiv.org/abs/2211.07896

B. Morris, **H. Oberschelp**. Mixing Time of the Overlapping Cycles Shuffle
https://arxiv.org/abs/2310.15438

Awards

2023 UC Davis Grad Slam, 3rd Place

In this university-wide public speaking competition, participants have three minutes to pitch their research and its use to society. I won 3rd place at the Davis campus-level contest.