Sameerah Helal

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Education

University of California, Davis	**Applied Mathematics, Statistics** (minor in Computer Science)	B.S.	2021
	Computer Science	Ph.D.	2022 – present

Appointments

Graduate Student Researcher, *UC Davis Computer Science* Sep 2022 – present
Developed a method for learning group attribution certificates for generative machine learning models.

Computer Science Instructor, *Juni Learning* Aug 2021 – May 2023
Taught Scratch, Python, and Data Science to students in elementary through high school. Personalized curriculum to each student, including for differently-abled and very young students.

Undergraduate Student Researcher, *UC Davis Statistics* Jun 2021 – Jun 2022
Extended existing linear methods of topology-preserving dimensionality reduction to a new, non-linear projection method using machine learning.

Mathematics Grader, *UC Davis Mathematics* Sep 2020 – Dec 2021
Graded proofs and assignments for Advanced Calculus, Stochastic Processes, and Applied Linear Algebra accurately and efficiently. Wrote rubrics and independently resolved scoring disagreements with students.

Undergraduate Student Researcher, *UC Davis Mathematics* Jan 2020 – Dec 2021
Improved accuracy of whale migration simulator models working with low quality (spatiotemporally coarse) data by 50%, as measured by similarity to simulators working with high quality data. Researched and designed metrics for quantifying model accuracy and improvement.

Supplemental Instructor, *Mission College, Santa Clara, CA* Jan 2019 – May 2019
Designed and implemented lessons for calculus students; acquired regular attendees through advertisement and engaging lectures.

Publications

Under Submission
Sameerah Helal and Aditya Thakur (2023). "Learning Attribution Certificates for Diffusion Models". Under submission to *38th Annual AAAI Conference on Artificial Intelligence*.

Undergraduate Thesis
Sameerah Helal and Stephanie Dodson (2021). "Recovering Individual Based Model Outcomes on Spatiotemporally Coarse Data". B.S. thesis. University of California, Davis.

Presentations

Recovering Individual Based Model Outcomes on Spatiotemporally Coarse Data (2021). Mathematics Undergraduate Research Conference, University of California, Davis.

Service

Awards Co-Director, *UC Davis Student Foundation* Aug 2020 – Dec 2021
Evaluated applications for emergency relief financial aid and tactfully communicated award decisions to applicants. Analyzed funding and awarding trends by generating statistics and visualizations.

ML Division Co-Lead, *Space and Satellite Systems at UC Davis* Dec 2020 – May 2021
Predicted usefulness of satellite data at a given time by deploying machine learning models on images taken by the satellite. Led members in preparation and presentation of research at the UC Davis Undergraduate Research Conference.

Learning Assistant, *UC Davis Mathematics* Sep 2019 – Dec 2020
Assessed and improved the mathematical understanding of struggling calculus and precalculus students. Collaborated with professors and TAs to maximize students' learning outcomes.