

Kyle Hansen

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Education

Ph.D. Student of Mathematics
University of California, Santa Barbara Fall 2019-Present

Bachelor of Science degree in Mathematics
Bachelor of Arts degree in Computer Science
Westmont College, Santa Barbara, CA Graduated May 2019; GPA:4.0

Related Experience

Computer Science Languages

- Python (experience with Django and Flask), Java, C, Scheme (Racket), R, Mathematica

Teacher's Assistant

University of California, Santa Barbara Fall 2019-Present
Westmont College; Santa Barbara, CA Fall 2016-Spring 2019

- Led 4 hours of weekly discussion section for lower division math courses.
- Graded and proctored midterm and final exams.
- Answered individual student questions during weekly office hours and Math Lab sessions.

Math Research Assistant

Summer 2018-Spring 2019

Westmont College; Santa Barbara, CA

- Performed research in the area of complex analysis, specifically relating to locating the roots of complex-harmonic polynomials.
- Proved a conjecture about the number and location of the roots of complex-harmonic polynomials.
- Discovered patterns and visualized problems using tools such as Mathematica and Geogebra.
- Synthesized and organized conjectures, lemmas, and proofs from various contributors.
- Presented research at the 2019 Joint Mathematical Meeting.

National Security Internship Program Intern

Summer 2017

Pacific Northwest National Lab; Richland, WA

- Determined appropriate representations of real-world datasets as graphs.
- Transformed real-world datasets into networks and graphs.
- Analyzed data networks using tools such as Gephi and the Python library NetworkX to discover scale-invariant properties, so as to generate realistic synthetic networks.
- Communicated discoveries of graph properties to project team and contributed to collaborative meetings by explaining nuances of the datasets and clarifying project initiatives.
- Explored various missing data mechanisms and applied machine learning algorithms on datasets in order to test accuracy of various imputation methods for recovering missing data using R and Python.

Publications, Presentations, and Honors

- 2019 Joint Mathematics Meeting, "Revitalizing Complex Analysis," *When the Fundamental Theorem of Algebra Goes Awry*.
- Gerald A. Edgar, Daniel H. Ullman, and Douglas B. West. Problems and solutions. *The American Mathematical Monthly*, 125(8):757, 2018.