Robert Simpson

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EXPERIENCE

Graduate Teaching Assistant - August 2019 - Present
San Diego State University
Prepare and conduct lectures four times a week to 20+ students for integral calculus course. Introduce students to real-world applications of calculus topics. Tutor students one-on-one through specific topics.

Supplemental Instruction Leader - August 2018 - May 2019
San Diego State University
Led groups of up to forty students covering material for linear algebra. Students who attended achieved grades thirteen percent higher compared to those who did not attend. This effect scaled with the number of attendances.

EDUCATION

Master of Science, Applied Mathematics - May 2021

San Diego State University, GPA: 3.95, Concentration in Dynamical Systems

Thesis: *Dynamic Mode Decomposition and Network Evolution*

Coursework: Signal Processing, Fourier Analysis, Numerical Optimization, Mathematical Modeling, Nonlinear Waves, Differential Equations

Bachelor of Arts, Economics; Minor in Mathematics - May 2019

San Diego State University, Specialization in Quantitative Analysis, GPA: 3.65, *Magna Cum Laude, Dean's List*

SKILLS

Programming: Python (Numpy, Pandas, TensorFlow, Matplotlib, Seaborn, SciPy, scikit-learn), SQL, MATLAB, Jupyter Notebooks, LaTeX

Mathematics and Statistics: mathematical modeling, optimization, numerical analysis, dynamical systems, chaos theory, machine learning, deep learning, neural networks, unsupervised learning (PCA, DMD)

Software: SAS, SPSS, Tableau

Other Skills: Communication and presentation of results, problem-solving, critical thinking, creativity, fluent in written and spoken German

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PROJECTS

These projects and more can be found on my Github: github.com/RCSimpson.

Master Thesis: Networks evolving dynamically implies the patterns within networks will evolve along with it. Using the data-driven method, Dynamic Mode Decomposition, I look for underlying dynamical structure in motif counts, or the number of times a pattern appears in a given network.

Hurst Exponent Estimation: Using Python libraries Pandas, Numpy, and Scipy I am able to extract statistical data from stock prices and measure the likelihood of the stock to move up or down given recent movements (i.e. measure the memory of the time series).