

Andrew Gracyk

agracyk2@illinois.edu | (916)705-8865

EDUCATION

University of Illinois at Urbana-Champaign

Ph.D., Statistics

Coursework: regression analysis I/II, mathematical statistics, stochastic processes, large sample theory (all advanced).

Fall 2021 – Present

University of California, Santa Barbara

M.A., Applied Mathematics

Master's Thesis Advisor: Paul J. Atzberger.

PhD-level coursework: measure theory (real analysis) A/B, partial differential equations A/B/C, ordinary differential equations A/B/C, numerical analysis A/B/C, machine learning, optimal transport.

Fall 2019 – Spring 2021

University of California, Los Angeles

B.S., Applied Mathematics, Minor in Statistics

Alpha Lambda Delta Honor Society, Beta Theta Pi.

Fall 2015 – Spring 2019

London School of Economics

Summer study abroad. Courses in managerial and financial accounting.

Summer 2018

GRADUATE RESEARCH

Statistical Physics Researcher

University of Illinois at Urbana-Champaign

Member of DIGIMAT program at UIUC, a collection of PhD students and faculty that research mathematical physics, data science, and materials science.

Current interest is in variational autoencoders in statistical mechanical systems.

Winter 2021 – Present

Convolutional Neural Networks in Learning Fokker-Planck Equations

University of California, Santa Barbara

Master's thesis. Employed CNNs to learn the Fokker-Planck differential operator and recover coefficients from the framework's parameter space.

Spring 2020 – Spring 2021

Machine Learning Researcher in Partial Differential Equations

Atzberger Research Group

Member of research group in machine learning at UCSB under Dr. Paul Atzberger, Professor of Mathematics.

Researched machine learning techniques in partial differential equations.

Utilized machine learning (CNNs and DNNs) to learn differential operators.

Developed machine learning strategies to deduce nonconstant diffusion function from diffusion eq. data.

Fall 2019 – Spring 2021

UNDERGRADUATE RESEARCH

Statistics Research Assistant in Imaging

University of California, Los Angeles

Assistant in statistics research for Dr. Rick Schoenberg, Professor of Statistics, in statistical imaging.

Performed investigation into research and advanced packages for image processing and data analysis in R.

Summer 2019

Statistics Research in Stochastic Processes in Finance

University of California, Los Angeles

Performed statistics research in designing a strategy in options trading using numerical simulation with R using geometric Brownian motion and the expectation of the maximum of a stochastic process.

Used binomial option pricing to value American calls, and tested strategy effectiveness.

Summer 2019

Mathematics Research in Numerical Analysis

University of California, Los Angeles

Fall 2018

Conducted research under Dr. Chris Anderson, Professor of Mathematics, that focused on numerical methods in algorithmic and high frequency trading.
Produced smoothing spline interpolant growth and curvature algorithms in MATLAB.

Mathematics Research in Stochastic Differential Equations Fall 2018
University of California, Los Angeles
Analyzed and applied research in numerical methods for financial stochastic differential equations.

EMPLOYMENT

Statistics Graduate Teaching Assistant Fall 2021 – Present
University of Illinois at Urbana-Champaign
Taught and lectured students weekly. Held office hour sections.
Created content and material for students.

STAT 400 – Statistics and Probability I (Ha Nguyen) Fall 2021

Mathematics Graduate Teaching Assistant Fall 2019 – Summer 2020
University of California, Santa Barbara
Taught and lectured students weekly. Held office hour and extra practice sessions.
Created homework, practice midterms, and practice finals for students.
Held multi-hour review sessions, speaking in front of 60+ students.

Math 3B – Integral Calculus (Mychelle Parker) Summer 2020
Math 3B – Integral Calculus (Hauchen Chen) Spring 2020
Math 3B – Integral Calculus (Mihai Putinar) Winter 2020
Math 3B – Integral Calculus (Darren Long) Fall 2019

Consolidated Communications Intern Fall 2014 – Winter 2015
Sacramento, CA
Interned at a telecommunications networking lab.
Gained networking experience in telephone and television service projects.
Helped establish a large-scale telecommunications system for phone lines, among other projects.

PRESENTATIONS AND TALKS

Convolutional Neural Networks in Learning Fokker-Planck Equations Spring 2021
MA Thesis Defense. University of California, Santa Barbara.

Machine Learning in Solving the Poisson Equation Diffusion Constant Fall 2020
SIAM Graduate Seminar. University of California, Santa Barbara.

Convolutional Neural Networks in Learning Partial Differential Equations Summer 2020
Applied Math Summer Seminar. University of California, Santa Barbara.

Convolutional Neural Networks in Learning Partial Differential Equations Summer 2020
Graduate Simulation Seminar Series. University of California, Santa Barbara.

A Special Case of Global Regularity for the Navier-Stokes Equation Summer 2020
Applied Math Summer Seminar. University of California, Santa Barbara.

HONORS, AWARDS

Graduate Block Fellowship Grant at UIUC 2021

ALD/PES Academic Honor Society at UCLA 2016 – 2019

Dean's Honors List at UCLA for consecutive quarters 2015 – 2019

Beta Theta Pi Academic Scholarship Awards

2017-2019

ACADEMIC OUTREACH

Organizer, Summer Applied Math Seminar at UCSB

Summer 2020

Organized the graduate student applied mathematics seminar at UCSB for summer 2020.

PROGRAMMING

Languages, experienced: R, MATLAB/Octave, Python (PyTorch, Numpy)

Languages, basic: C++, Swift

Additional software: Git, Latex, Excel, Word, Powerpoint, Photoshop, Affinity, Maya, Revit, SolidWorks, AutoCAD, Sketchup

LANGUAGES

English (native)

Spanish (3 classes)

French (3 classes)