

# Andrew Gracyk

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## EDUCATION

### University of Illinois at Urbana-Champaign

*Ph.D., Statistics*

Coursework: regression analysis, mathematical statistics, stochastic processes (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

### Convolutional neural networks in learning Fokker-Planck statistical mechanics

*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*

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.

Fall 2018

### Mathematics Research in Stochastic Differential Equations

*University of California, Los Angeles*

Analyzed and applied research in numerical methods for financial stochastic differential equations.

Fall 2018

## EMPLOYMENT

<b>Statistics Graduate Teaching Assistant</b> <i>University of Illinois at Urbana-Champaign</i> Taught and lectured students weekly. Held office hour sections. Created content and material for students.	Fall 2021 – Present
STAT 400 – Statistics and Probability I (Ha Nguyen)	Fall 2021
<b>Mathematics Graduate Teaching Assistant</b> <i>University of California, Santa Barbara</i> 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.	Fall 2019 – Summer 2020
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
<b>Consolidated Communications Intern</b> <i>Sacramento, CA</i> 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.	Fall 2014 – Winter 2015

## PRESENTATIONS AND TALKS

<i>Machine learning in solving the Poisson equation diffusion constant</i> SIAM Graduate Seminar. University of California, Santa Barbara.	Fall 2020
<i>Convolutional neural networks in learning partial differential equations</i> Applied Math Summer Seminar. University of California, Santa Barbara.	Summer 2020
<i>Convolutional neural networks in learning partial differential equations</i> Graduate Simulation Seminar Series. University of California, Santa Barbara.	Summer 2020
<i>A special case of global regularity for the Navier-Stokes equation</i> Applied Math Summer Seminar. University of California, Santa Barbara.	Summer 2020

## 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

<b>Organizer, Summer Applied Math Seminar at UCSB</b> Organized the graduate student applied mathematics seminar at UCSB for summer 2020.	Summer 2020
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## 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)