

# DANIEL GUO

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## EDUCATION

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**University of California Santa Barbara**  
B.S. in Computer Science, B.S. in Mathematics  
College of Creative Studies | Honors

September 2018 - June 2022  
GPA: 3.94/4.00

## RESEARCH EXPERIENCE

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### **Data-Driven Learning of Differential Operators**

Nov. 2018 - Present

U.G. Researcher under Dr. Atzberger (Dep. of Mathematics at UCSB)

- We are building neural networks to model differential operators. We have achieved success in modeling the Laplacian operator and its Green's function in 2 dimensions by using periodic convolutions to learn their kernel representations. We hope to extend this to higher dimensions and more complicated PDEs.
- Gave talk at 2019 RACA conference on this work.

## TECHNICAL STRENGTHS

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<b>Languages</b>	Python, C++, Java, C, LaTeX
<b>Libraries</b>	PyTorch, NumPy, Matplotlib, Flask, Java AWT & Swing, OpenMP & Pthreads
<b>Technologies</b>	Git, Linux, Vim, Jupyter Notebook

## PROGRAMMING PROJECTS

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### **hiwhatsyourname** - Flask Web App

- Project for CalHacks 2020 intended to help college students living in the dorms get to know each other.
- Users fill out an online form with their personal info, and it generates a virtual business card that they can easily share with a QR code.
- We implemented the backend with Python Flask & Jinja to process requests and generate the business cards, and we used qrcode API to create the QR code.

### **GenNet** - Genetic Algorithm + Neural Networks

- Designed architecture & hyperparameter search for neural networks using a genetic algorithm w/ PyTorch.
- Applied algorithm on MNIST dataset and achieved 96.6% classification accuracy with a minute of training.

## RELEVANT COURSEWORK

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### **Computer Science**

Algorithms, Data Structures  
Machine Learning  
Computer Architecture  
Parallel Scientific Computing  
Automata & Formal Languages  
Blockchain & Distributed Ledgers  
Computer Programming & Organization  
Post-Quantum Cryptography (Graduate)  
Logic in Computer Science (Graduate)

### **Mathematics**

Linear Algebra  
Abstract Algebra  
Real Analysis  
Combinators  
Multivariable Calculus  
Differential Equations  
Probability & Statistics  
Discrete Math

## OTHER EXPERIENCE

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### Teaching Assistant for CS130B – Algorithms

Jan. 2020 - Mar. 2020

- Hosted open lab hours for students to ask for help with homework and programming assignments.
- Held review sessions before exams and gave one-on-one feedback for students who requested it.

### Grader/Reader for MATH8 – Intro. to Higher Math

Jan. 2020 - Mar. 2020

- Graded homework and offered feedback to students.

### College of Creative Studies Community Council Officer

Jan. 2020 - Present

- Plan various events throughout the quarter for CCS students.
- Coordinated and cohosted the first CCS Integration Bee.

## AWARDS & ACTIVITIES

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| · UCSB SciOly Fermi & Code Busters Event Supervisor              | 2019, 2020 |
| · Top 35% in Putnam Mathematics Competition                      | 2018       |
| · Ohlone Certificate of Accomplishment in Pure Mathematics       | 2018       |
| · Lockheed Martin CodeQuest & Stanford ProCo Coding Competitions | 2018       |