

# John Bergschneider

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## EDUCATION

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### Florida State University

*Ph.D. in Mathematics*

August 2014 – July 2020

*Tallahassee, Florida*

## EXPERIENCE

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### Assistant Professor of Mathematics

*University of North Georgia*

August 2020 - Present

*Dahlonega, Georgia*

- Taught Cryptography, Data Science 101, and Calculus II
- Developed Data Science 101 course which is now taught to over 240 students per semester
- Organized Research Session at Joint Math Meeting on Geometric Group Theory

### Graduate Teaching Assistant

*Florida State University*

June 2016 - June 2020

*Tallahassee, Florida*

- Taught Calculus III, Linear Algebra, Calculus I, Ordinary Differential equations
- Developed algorithms to classify geometric objects found in large data sets based on algebraic invariants
- Advised new graduate students on coursework and finding a research area

## PROJECTS

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### Cryptography Primitives | *Python, Jupyter Notebook, Git*

May 2021 – Present

- Cracked the Vigenere Cipher using statistical attack on english letter frequency
- Verified the accuracy of the Miller-Rabin primality test by proof and simulation
- Implemented a probabilistic random number generator using the Miller-Rabin primality test

### Interacting with EVM | *Solidity, Python, Web3, Git*

March 2021 – Present

- Built python scripts to send ether, deploy contracts, and interact with existing contracts on testnets
- Audited Uniswap-V2-Core and Uniswap-V2-Periphery contracts to understand pair tokens and flash swaps
- Wrote python API that interacts with UniswapV2Router to swap tokens and add/remove liquidity

### Software for Data Science | *HTML/CSS, Python, MyBinder, NBgitpuller, JupyterHub*

December 2020 – Present

- Built course site that connects student accounts on Jupyterhub to assignments from github repository
- Integrated and edited test files for verifying correctness of solutions in programming assignments
- Updated and edited programming lectures and assignments to focus on statistical concepts and linear regression
- Collaborated with IT department to suggest features and update libraries on Jupyterhub

## LEADERSHIP

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**Mentor** | *Association for Women in Math-FSU Chapter*

September 2019 – Spring 2020

**Council Person** | *FSU Graduate Student Council*

August 2018 – August 2020

## AWARDS

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**Distinguished Teaching Assistant Award**

April 2019

**FSU Dean's Scholarship**

August 2016 – August 2019

**Qian Endowment for Excellence Travel Support**

November 2018

## TECHNICAL SKILLS

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**Languages:** Python (Highly Proficient), Solidity, HTML/CSS, Latex, Markdown

**Developer Tools and Libraries:** Git, Jupyterhub, Spyder, Remix, Brownie, Datascience, NumPy, Web3

**Domain Knowledge:** Group Theory, Topology, Linear Algebra

**Current Research:** Cryptography, EVM, Automated Market Makers, Decentralized Banks, Smart Contracts

**Other Languages:** Spanish (Conversational)