

# Jerry Huang

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## RESEARCH VISION

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I am broadly interested in answering the following research questions on both theoretical and applied levels:

- (1) How do we construct interpretable machine learning models?
- (2) How can we ensure that models are trustworthy, reliable, and fair?
- (3) How can we better leverage domain expertise when building real-world models?

## EDUCATION

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### Duke University

B.S. in Computer Science with Minor in Statistics

*Thesis: Generating Fingerprint Lineups using Fingerprint Matching Techniques*

Durham, NC

*Aug 2018 – May 2022*

## RESEARCH EXPERIENCE

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### Duke Law School

*Research Assistant*

Durham, NC

*May 2021 – May 2022*

- Implemented and fine-tuned different machine learning and graph matching algorithms for fingerprint matching. Developed a software framework for generating fingerprint lineups.
- Successfully completed and defended my undergraduate thesis “A Study on the Feasibility and Generation of Fingerprint Lineups for Forensic Science.”
- Advisors: Prof. David Banks, Prof. Adele Quigley-McBride

### Duke CS Department

*Research Assistant*

Durham, NC

*Jan 2020 – Dec 2020*

- Researched approaches of provably improving online algorithms for solving the Ski Rental Problem when given machine learning predictions about the input.
- Advisors: Prof. Debmalya Panigrahi

### Ren Lab at UC Riverside

*Research Assistant*

Riverside, CA

*Aug 2016 – Sept 2017*

- Worked on a geographic load-balancing algorithm for optimizing the carbon and water footprints of data centers and implemented a discrete event simulation to validate its performance.
- Finished a technical report titled “Minimizing Electricity Cost and Water Footprints for Geo-Distributed Interactive Services with Tail Latency Constraint.”
- Advisors: Prof. Shaolei Ren

## INDUSTRY EXPERIENCE

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### VectorShift, Inc. (YC S23)

*Founding Software Engineer*

New York, NY

*Oct 2023 – Present*

- Working on a platform for building and deploying generative AI applications.
- Designing and implementing end-to-end features to enhance user experience and expanding platform functionality.

### Old Mission Capital

*Quantitative Trader*

New York, NY

*Aug 2022 – Aug 2023*

- Developed and improved new and existing systematic trading algorithms for market making domestic ETFs.
- Created tools and scripts in python for automating workflows and visualizing data/risk for the team and myself.
- Wrote APIs allowing for efficient and flexible retrieval of large data sets and data analysis job requests.

### Vertex Protocol

*Software Engineer*

Remote

*Sept 2021 – May 2022*

- Joined as the fifth employee at Vertex Protocol, a blockchain startup backed by Jane Street, HRT, among others.
- Designed and implemented state-of-the-art smart contracts, enabling users to stake crypto of foreign currencies.
- Developed modular and end-to-end test suites for decentralized limit order book exchange smart contracts.

## Secureframe

Software Engineering Intern

Sunnyvale, CA

Jan 2022 – April 2022

- Implemented new searching and filtering features for the company's webapp (built on a Ruby on Rails tech stack).
- Handled customer and internal support tickets covering both front and backend bug fixes and code refactoring.

## Optiver US LLC

Quantitative Trading Intern

Chicago, IL

June 2021 – Aug 2021

- Completed a class on pricing options and other derivatives. Traded index options through market making and position taking.
- Worked on improving machine learning models used for high-frequency futures trading on the Delta One desk.

## Amazon.com

Software Development Engineer Intern

Seattle, WA

May 2020 – July 2020

- Designed, implemented, and tested Alexa Skills Kit command line interface (ASK CLI) commands, which are used by developers on the platform today for viewing the deployment history of their Alexa Skills.

## Emailio (YC)

Software Engineer

Durham, NC

April 2020 – Aug 2020

- YC-backed startup focused on building email applications geared towards wellness and building healthy habits.
- Designed and implemented features including algorithms to analyze users' email habits, provide suggestions for email filtering rules, etc. (<https://www.emailio.com/>).

## TEACHING EXPERIENCE

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### COMPSCI330: Design and Analysis of Algorithms

Undergraduate Teaching Assistant

Durham, NC

Spring '20, Fall '20

- Graded assignments and exams and held office hours. Topics from this class include design techniques (e.g. greedy algos, search algos, etc.), data structures, graph algorithms, optimization, large scale computing, and intractability.

### COMPSCI230: Discrete Mathematics for Computer Science

Undergraduate Teaching Assistant

Durham, NC

Spring '20, Spring '21

- Graded assignments and exams and held office hours. Topics from this course include mathematical logic and proofs, set theory, discrete probability, number theory, mathematical induction, graph theory, etc.

## REPORTS

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- (1) "Examining the Feasibility and Effectiveness of Fingerprint Lineups using Fingerprint Matching Techniques"
- (2) "Ski Rental Problem with Machine Learning Predictors"
- (3) "Minimizing Electricity & Water Costs for Geo-Distributed Interactive Services with Tail Latency Constraint"

Click the name of any report to view the raw manuscript.

## SKILLS

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**Programming:** Python, Java, SQL, C/C++, SML, R, MATLAB, Linux Shell

**Frameworks/Libraries:** Pandas, NumPy, sklearn, TensorFlow, PyTorch, FastAPI

**Other:** Git, macOS, LATEX, Excel

**Spoken Languages:** English (Native), Mandarin (Fluent)

## AWARDS

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3-Time American Invitational Mathematics Competition (AIME) Qualifier

USA Computing Olympiad (USACO) Gold Division

National Merit Scholarship Recipient

Carnegie Hall Piano Performer

2nd place finish in International Music Competition 'Salzburg' Grand Prize Virtuoso 2017

3rd Place finish in International Young Gifted Musician Festival "Passion of Music 2017"

Winner, American Fine Arts Festival 2016

1st, 4th, and finalist place finishes in Solo Performance (2014, 2016, 2017), US Open Music Competition

4-Time Pacific Swimming Annual Top-3 Times