

# Daniel Qian

New York, NY

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## Education

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### NYU Courant

New York, NY

PHD CANDIDATE IN COMPUTER SCIENCE

Aug 2023 - PRESENT

- *Advisors:* Anirudh Sivaraman, Jinyang Li
- *Research Interests:* Distributed Systems, Consensus Protocols, Systems for ML.

### Johns Hopkins University

Baltimore, MD

B.S. & M.S.E. IN COMPUTER SCIENCE

Aug 2017 - Aug 2021

- *Advisor:* Yair Amir
- *Masters Project:* An Intrusion Tolerant Architecture and Protocol for Substation Protection
- *Honors:* CS Department Outstanding Senior Award (1 of 2); Deans List (GPA 3.99/4.0)

## Research

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### Systems@NYU

Aug 2023 - PRESENT

- Currently working on designing Byzantine Fault Tolerant protocols that take advantage of new network primitives developed at NYU
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### Distributed Systems and Networks Lab, JHU

Jan 2021 - Aug 2021

- Designed an intrusion tolerant architecture and protocol for power grid substations to meet demanding latency requirements using replication, threshold cryptography, and proactive recovery
- Implemented and benchmarked protocol, including in scenarios with simulated intrusions and faults

## Publications

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Sahiti Bommareddy, **Daniel Qian**, Christopher Bonebrake, Paul Skare, Yair Amir (2022). "Real-Time Byzantine Resilience for Power Grid Substations", *41st Symposium on Reliable Distributed Systems, 2022*.

## Work Experience

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### Software Engineer, Bloomberg LP

Aug 2021 - June 2023

- Researched quantile regression and outlier detection models for anomaly detection in trade matching and settlements
- Refactored model predictions service, improving scalability and extensibility for future deployment of models
- Improved tagging features and optimized performance for inner source log monitoring/parsing project written in C++
- Created a Web UI (React/Flask) for configuration of the log monitoring service using Github Enterprise APIs to create automated PRs

### Intern, LTN Global

May 2020 - Aug 2020

- Led development for mobile ingest project to stream video to LTN's delivery network with mobile devices instead of specialized hardware
- Designed a protocol to adapt encoder bitrate to a volatile cellular link, minimizing queuing delays while maintaining highest possible quality
- Implemented protocol in C, integrated into Android and iOS apps, and tested with a commercial 4G-LTE data plan

### Engineering Intern, Bloomberg LP

Jun 2019 - Aug 2019

- Created monitoring system for distributed applications in Bloomberg that handle and manipulate financial data
- Used Kafka to collect runtime statistics and connectivity status and Flask and Web Sockets to display live information

## Projects

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### Wikipedia Speedruns

Apr 2021 - PRESENT

- Created open source web-based game with Flask, Vue, and MySQL for competitive Wikipedia races, with 1000+ monthly active users
- Implemented game functionality on frontend, as well as databases and APIs for leaderboards, user accounts, private lobbies, and site administration
- Actively developing new features and researching NLP-based techniques for generation of random prompts and solutions

### Hophacks Website (Website Lead)

Feb 2020 - Dec 2020

- Rebuilt Hophacks registration website from scratch using Flask, React, and MongoDB
- Mentored other students in Hophacks organization on summer projects to implement new features

## Optimization and Intrusion Detection for Resilient Power Grids

Feb 2020 - May 2020

- Improved latency of a byzantine intrusion tolerant SCADA system by upgrading hardware and libraries and tuning parameters
- Designed machine learning outlier detection model based on network traffic patterns using scikit-learn
- Wrote Python scripts to collect, store, and train on network data, and predict intrusions in real time

## Teaching

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Course Assistant duties included grading, holding office hours, and conducting review sessions.

Spring 2021	<b>Software for Resilient Communities</b> , Project Mentor
Fall 2020	<b>Intermediate Programming (C/C++)</b> , Course Assistant
Fall 2019	<b>Intro to Algorithms</b> , Course Assistant
Spring 2019	<b>Automata and Computation Theory</b> , Course Assistant
Fall 2018	<b>Automata and Computation Theory</b> , Course Assistant

## Miscellaneous

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**Programming Competitions:** *JHU ICPC Team*: Reached NAPC in 2021; *Bloomberg Codecon*: Top 50 in Finals 2018, 2019; *USA Computing Olympiad*: Achieved Platinum in 2017

**Programming Languages:** Python, C, C++, JavaScript, Java, Rust, Haskell

**Technical Skills:** Flask, React, MySQL, MongoDB, Redis, NumPy, Scikit-learn, Pandas, Pytorch, Kafka, Git, SVN, Shell Scripting, Docker, LaTeX