

Aiden Cullo

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WORK EXPERIENCE

Software Engineer I — **HeroGrow** Apr 2023—Present

- Designed a **Ruby on Rails** REST API to provide real-time seat availability for entertainment venues.
- Integrated Turbo Frames into browser GUI for targeted content updates, slashing **Node.js** server requests by 55%.
- Redesigned desktop application for a more user-friendly mobile experience, resulting in a 25% decrease in bounce rate.
- Engineered a data pipeline in **JavaScript** to tokenize 10k daily customer reviews, optimizing entry storage and access.
- Enabled credential exchange between internal login systems and third-party vendors, streamlining authentication.
- Enhanced built-in debugger with custom log levels and tags to comprehensively mitigate potential security breaches.

Software Engineer I — **Tradigro** Dec 2022—Apr 2023

- Indexed **Vue.js** journals, trades, and achievements views, allowing for more granular and searchable public content.
- Decoupled raw trade and statistical analysis modules, reducing duplicate feed publications upon user profile updates.
- Standardized text encoding format in **Vuex** frontend data store, eliminating 95% of incorrect comment representations.
- Refactored the data upload protocol, serializing I/O on trade files, preventing information loss from race conditions.
- Augmented the trade viewer toolkit with magnification and spatial tagging, broadening accessibility for diverse users.
- Implemented finer controls on user profile visibility and personal data, ensuring compliance with privacy standards.

Junior Software Engineer — **SuperCerebros** May 2021—Dec 2022

- Developed a progressive web application from scratch in **React**, distributing to over 10k international customers.
- Integrated mobile and desktop applications in Ionic SDK and **TypeScript**, cutting total server requests in half.
- Architected DBMS with **Google Firebase**, storing 1TB of user data while maintaining sub-5ms latency.

Research Assistant — **SUNY Binghamton** Aug 2018—Nov 2020

- Tuned evolutionary search algorithm for nanocrystal structures in **C** to obtain stabler ground states 90% of the time.
- Achieved 50% speed-up of open-source **MAISE** machine learning library via parallelization with **openMP** toolkit.
- Automated neural network training with **Bash** scripts, reducing the iteration cycle from 100 to 20 hours.

Physics Fellow — **California Institute of Technology** Jun 2019—Aug 2019

- Performed scanning tunneling microscopy of topological defects in semiconductor surface states.
- Cross-examined results of pure and Cr-doped $(BiSb)_2Te_3$ -bi-layer topological insulator substrates.

Software Engineer Intern — **Sapienza University of Rome** Jun 2018—Aug 2018

- Built a multi-layer convolutional neural network in **Python**, classifying particle collisions with 99.5% accuracy.
- Generated 20k training samples based on weakly interacting massive particle (WIMP) theoretical models.
- Modernized **pytest** unit and integration test suite by removing dead or duplicate code, reducing runtime by 80%.

Software Engineer Intern — **NASA** Jun 2017—Aug 2017

- Authored a data analysis library with **C++**, detecting premature battery deterioration in 98% of autonomous drones.
- Containerized analysis framework with **Docker** for machine-agnostic, distributed, and real-time field use.
- Expanded **MATLAB** toolkit to discrete-probability distributions, allowing composite systems prognostics.

PUBLICATIONS

1. Samad Hajinazar, Ernesto D. Sandoval, Aiden J. Cullo, and Aleksey N. Kolmogorov. Multitribe evolutionary search for stable cu-pd-ag nanoparticles using neural network models. *Phys. Chem. Chem. Phys.*, 21:8729–8742, 2019

EDUCATION

SUNY Binghamton

B.S. Computer Science | **B.S. Mathematics** | **B.S. Physics** — GPA: 3.85/4

Honors: *summa cum laude*, Upsilon Pi Epsilon Honor Society

Class of 2020
Binghamton, NY

SKILLS

Programming Languages:

Python, JavaScript, TypeScript, C++, C, Java, Ruby, SQL, Go, Haskell, PHP, Swift

Frameworks:

React, Vue.js, Angular, Node.js, Ruby on Rails, Flask, Django, NumPy, PyTorch

Tools:

Docker, NoSQL, MongoDB, Git, Agile, CI/CD, VS Code, Google Cloud, AWS

Spoken Languages:

English (*native*), Spanish (*fluent*), French (*proficient*), Portuguese (*basic*)