Aiden Cullo

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EXPERIENCE

Software Developer I **Herogrow** **Apr 2023—Present**
- Designed and implemented B2B RESTful API with **Ruby on Rails** to access seat reservation SaaS. Expanded off-the-shelf debugging infrastructure by adding custom log levels and tags, highlighting domain-specific errors/warnings.
- Integrated **JavaScript** Turbo Frames into **HTML** DOM tree, obviating full page reloads on localized UX interactions. Alleviated a request bottleneck by inserting focused AJAX requests, achieving a **4-fold** speed-up of media rendering.
- Engineered secure communication channel between frontend product platform and Linode cloud server. Processed thousands of customer reviews on the admin dashboard for real-time visualization and analysis.

Software Developer I **Tradigro** **Dec 2022—Apr 2023**
- Decoupled **Vue.js** sharing modules for journals, trades, and achievements, allowing for more granular and searchable public content; reducing extraneous or repeat feed traffic by **70%** across all platforms.
- Standardized text encoding format in **Vuex** frontend data store and throughout full-stack **JavaScript** application. Eliminating **95%** of customer reports of incorrect or inconsistent visual representations of posts, comments, or profiles.
- Headed backend **Node.js** refactor of data upload protocol, serializing I/O operations on user trade files, preventing information loss from race conditions and system failure.

Junior Software Developer **SuperCerebros** **May 2021—Dec 2022**
- Developed a progressive web application from scratch in **React**, distributing to over **10,000** 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 **Python**/**Bash** scripts, reducing the iteration cycle from **100** to **20** hours.

Physics Fellow **California Institute of Technology (Caltech)** **Jun 2019—Aug 2019**
- Performed scanning tunneling microscopy (STM) of topological defects in semiconductor surface states.
- Cross-examined results of pure and Cr-doped $(BiSb)_2Te_3$-bi-layer topological insulator substrates.

Research 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 Intern **National Aeronautics and Space Administration (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.

EDUCATION

SUNY Binghamton **Class of 2020**
B.S. Computer Science | **B.S. Mathematics** | **B.S. Physics** — GPA: 3.85/4 Binghamton, NY
Honors: *summa cum laude*, Upsilon Pi Epsilon Honor Society

SKILLS

Programming Languages: Python, JavaScript, TypeScript, C++, Go, C, Java, Ruby, SQL, PHP, HTML, CSS
Frameworks: React, Vue.js, Angular, Node.js, Ruby on Rails, NumPy, PyTorch, pandas, pytest, Tailwind
Tools: Docker, NoSQL, MongoDB, Git, Agile, CI/CD, VS Code, Linux, Google Cloud
Spoken Languages: English (*native*), Spanish (*fluent*), French (*prof.*), Portuguese (*elem.*)

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