Maximo Machado

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Work Experience

NVIDIA **Santa Clara, CA**

Software Developer, Deep Learning Libraries Jul 2023 – Present

- Developing Cutlass Operator, a kernel library for querying, autotuning, and testing CuTeDsl kernels adopted by PyTorch Inductor
- Extending compilation time benchmarking of CuTeDsl and cuTile kernels for daily performance tracking
- Scaled up pre-silicon testing of JIT-compiled MLIR-based GPU kernels; discovered multiple bugs within Rubin Sparse GEMM kernels
- Debugged subtle GUID collisions for internal library that compiled tens of thousands of kernels to ship to customers such as cuDNN, TensorRT, and cuBLAS

CUDA Performance Intern Jun 2022 – Aug 2022

- Prototyped multithreaded improvements in CUDA's compute cache resulting in a 2-3x performance increase
- Implemented performance benchmarks and determined optimal lock granularity and lock-type based on data
- Presented findings to CUDA Performance team and broader CUDA team as possible inclusion into production

John Deere **Remote**

Product Engineering Intern Jun 2021 – Aug 2021

- Developed and presented demos for proof of concepts utilizing Python and AWS for new team of 5 people
- Created CI/CD pipelines deploying code onto AWS services using infrastructure-as-code tools such as Terraform
- Migrated essential licensing encryption servers to new testing environment providing much-needed added security

Falcn Lab LLC **Remote**

Full Stack Web Developer Intern Aug 2020 – Nov 2020

- Architected a Customer Relationship Management (CRM) providing better organizational tools for working with company clients
- Designed a SQL database schema with careful attention paid to normalization
- Extended Content Management System's (CMS) admin tools to assist company's ability to post new content and articles

Education

Massachusetts Institute of Technology **Cambridge, MA**

Bachelor of Science in Computer Science Sep 2019 – May 2023

- **Honors**: 4.7 / 5.0 GPA
- **Courses**: Performance Engineering, Design and Analysis of Algorithms, Engineering Data Analysis, Compiler Architecture

Projects

Spotify Playlist Manager

Sole Developer Dec 2020 – Dec 2020

- Created a website that serves a peak average 200 monthly users, spotifyplaylistmanager.net, that expands Spotify user's abilities to manage and manipulate their playlists
- Implemented the Multiple Playlist Searcher which Spotify implemented similar functionality 3 years later
- Wrote performant code by caching API requests and queuing jobs to sustain high server load and workaround Spotify API limitations

Skills

- **Languages**: English
- **Programming**: Python, C++, C, CUDA, Rust, Typescript
- **Tools**: MLIR, LLVM, CMake, Git, PostgreSQL, NGINX