

Derek Rodriguez

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EDUCATION

Northeastern University

Master of Science in Electrical & Computer Engineering

Boston, MA

Sept 2019 – Aug 2023

Clemson University

Bachelor of Science in Computer Science

Clemson, SC

Sept 2015 – Mar 2019

EXPERIENCE

Machine Learning Engineer

Cloudastructure Inc.

Boston, MA

Feb 2021 – Feb 2023

- Optimized bandwidth utilization 10X in real-time smart video recording app; enabled fine-grained control over transcoding parameters and built a zero-copy transformation pipeline | *C++*, *OpenCV*, *FFmpeg*
- Reduced inference latency 20% by moving preprocessing from CPU to GPU | *Nvidia DALI*
- Designed and implemented code deployment strategy for ARMv7 edge devices and x64 GCP Cloud VMs | *Docker*, *Portainer*
- Lead product demonstrations in both English and Spanish with clients at largest security trade show in South America (ESS+)

Natural Language Processing Consultant

Pre-seed Social Media Startup

Charleston, SC

Apr 2022 – Oct 2022

- Designed and implemented topic classification to drive engagement on food, nature and current events
- Built custom dataset from 6 years of Reddit data as a proxy for user content | *jq*, *Bash*, *GNU Parallel*, *Pandas*
- Deployed service to production environment with near-zero increase in operational cost | *Kafka*, *Docker Compose*, *S3*, *GitLab CI*

Graduate Research Assistant

Northeastern University Computer Architecture Lab

Boston, MA

Sept 2019 – Aug 2023

- Developed simulation-driven tool to automate vulnerability detection for RISC-V CPU designs | *Go*
- Quantified key transient execution attack parameters and reproduced spectre attacks in SonicBOOM CPU soft core | *Chisel*, *Verilator*

REU Program Intern

Georgia Tech Research Institute CIPHER Lab

Atlanta, GA

Mar 2018 – Jul 2018

- Visualized recurring assembly sequences in multi-petabyte dataset of malware for identifying prominent attack vectors | *Python*, *Tableau*

PROJECTS

Self-driving Robot | *ROS 2*, *Gazebo*, *C++*, *Python*

- Developed path-planning algorithm supporting reconfigurable goal destinations
- Improved memory usage 98% by implementing a novel data structure published in *Constant Time Neighbor Finding in Quadrees* by Aizawa et al
- Performed simulated testing with the ROS Turtlebot platform | *Gazebo*

Mecha Zombie Meltdown | *C++*, *SDL2*, *Ableton Live*

- Developed a top-down zombie survival game with a bespoke game engine | *SDL2*, *C++*
- Improved memory performance utilizing an object pooling strategy
- Wrote and produced game soundtrack and sound effects | *Ableton Live*

Koi No Yokan | *Python*, *Docker*, *FastAPI*, *NumPy*, *Pandas*, *Scikit-learn*

- Built a data harvester for anime reviews and recommendations | *Python*, *Pandas*
- Designed collaborative filtering recommendation algorithm driven by user viewing history
- Implemented website search feature using TF-IDF as the primary signal

TECHNICAL SKILLS

Programming Languages: Python, C++, C, Go, CUDA, Bash, HTML/CSS, R

Libraries: FastAPI, Nvidia DALI, PyTorch, OpenCV, Pandas, NumPy, Matplotlib, Boost

Misc. Tools: Git, FFmpeg, Tableau, Docker, GitHub CI, Google Cloud Platform, VS Code, Redis, MongoDB, SQLite