Nicholas R Ramirez

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Education

Massachusetts Institute of Technology Cambridge, MA

Candidate for Master of Engineering in Electrical Engineering and Computer Science *May 2023*

Bachelor of Science in Electrical Engineering and Computer Science *May 2022*

- GPA: 4.9/5.0
- Relevant Coursework: Design and Analysis of Algorithms, Fundamentals of Programming, Natural Language Processing, Machine Learning in Healthcare, Robotics, Intro to Machine Learning, Intro Digital System Lab, Circuits and Electronics, Signal Processing, Interconnected Embedded Systems, Computation Structures, Math for Computer Science

Experience

Plaid June 2022 – August 2022

Software Engineering Intern on Infrastructure *San Francisco, CA*

- Designed and implemented a new alert routing system sharded per team
- Utilized complex PromQL to handle default Kubernetes alerts in new system
- Created tooling to toggle decryption of helm secrets and enable local testing of alert routing
- Worked with Kubernetes, Helm, Helmchart, and Prometheus

Software Engineering Intern on Update Pipeline *June 2021 – September 2021*

- Horizontally scaled a core pipeline to create pod redundancy, enable load balancing, and ensure unique work assignment
- Implemented a recency filter to prevent scheduling events from occurring too often
- Wrote a detailed project plan for cross-team review which included design, implementation, and milestone details
- Completed necessary preliminary scoping for multiple leader elections using etcd to set up future planned work
- Utilized Redis locks (key-value database), Kubernetes, SQL, Golang, and Git

Imputing Parkinson's Patient Data with Machine Learning March 2021 – May 2021

Undergraduate Researcher *Cambridge, MA*

- Utilized linear regression and clustering to predict disease progression (UPDRS) scores for Parkinson's patients in the Fox Insight data set
- Ran multiple experiments to explore and validate the Fox Insight data set for future machine learning research
- Mentored by CSAIL's head of the Clinical Decision-Making Group at MIT and a Harvard clinician

Amazon Tenmarks Oct. 2017 – March 2018

Independent Researcher *Los Angeles, CA*

- Implementation of a personalized learning A.I. program within a high school class
- Independently organized and analyzed the effects of Amazon's Tenmarks program within multiple Algebra 2 classes
- Routinely presented to Amazon representatives to get future necessary resources and reveal research findings

WaferSat September 2018 – March 2019

Undergraduate Researcher *Cambridge, MA*

- Design and materialized a small satellite made using Micro-Electrical-Mechanics Systems Technology
- Contributed significantly to thermal code necessary to run thermal vacuum tests
- Initiated and lead the implementation of Object-Oriented sensors in order to maintain a consistent temperature gradient
- Presented to MIT Lincoln Lab

Projects

Active Noise Cancellation | *SystemVerilog* October 2020- December 2020

- Implemented real-time noise cancellation on a Xilinx Artix-7 FPGA by utilizing a Normalized Least Mean Squares adaptive algorithm
- Created a hardware product that enabled consumers to cancel background noise while continuously playing music

RISC-V Processor | *Minispec (derivative of Bluespec), GIT* October 2019- December 2019

- Developed a gate-level design for a reduced instruction set computer (RISC) processor with two-way set-associative caches
- Optimized my fully functional pipelined processor to run at 1.5 GHz

Arduino Laser Tag | *Python, Google Geolocation API, C++, GIT, SQL* March 2019- May 2019

- Designed and developed a playable laser tag game using an ESP32 microcontroller
- Utilized Google's Geolocation API to triangulate player location and display on handheld device
- Implemented SQL databases to store player information

Skills and Achievements

Languages: Python, Golang, Java, Pytorch, SystemVerilog, C/C++, SQL, MATLAB, LATEX, Minispec, ROS
Activities: Intro to Machine Learning Teaching Assistant, Differential Equations Grader, Designer - Mass Tech, Intramural sports
Awards: Hispanic Scholarship Fund Scholar, Coca-Cola Foundation Scholarship, Wells Fargo Scholarship, AP Capstone Diploma, National Hispanic Scholarship Recipient