

Juan Castillo

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EDUCATION

COLUMBIA UNIVERSITY

BS IN COMPUTER SCIENCE

Aug.2023 - May.2027

Fu Foundation School of Engineering
and Applied Science (SEAS)

LINKS

LinkedIn:

www.linkedin.com/in/juan-castillo1

GitHub:

www.github.com/juancastillo346

COURSEWORK

Advanced Programming

Data Structures

Discrete Mathematics

Multivariable Calculus

Linear Algebra and Probability

Economics

SKILLS

PROGRAMMING

Proficient:

Java • Python • TypeScript

Competent:

JavaScript • C++ • SQL

C • Rust • Go

TECHNOLOGIES

Cloud & Big Data:

AWS Glue • AWS StepFunction

AWS Fargate • AWS DDB

PySpark • Scala

Testing:

JUnit • pytest • Postman

JavaScript Libraries & Frameworks:

React • Next.js • Tailwind CSS

Miscellaneous:

Flask • Spring • Git • GitHub

Docker • REST APIs • JSON • SQL

HOBBIES

Rubik's Cubes

Board Games with Friends

Long Walks

Traveling

EXPERIENCE

AMAZON | SOFTWARE ENGINEERING INTERN, AWS HEALTHAI

May 2025 - Aug 2025

- Increased export throughput from 5 GB/hour to 4 TB/hour ($800\times$ faster) by redesigning and deploying a FHIR export system for 20 TB+ of clinical data using AWS Glue (PySpark), Fargate, and Step Functions.
- Reduced JSON parsing by $\approx 95\%$ and cut filtered-run compute cost by $4\times$ via FHIR-spec resourceType and modifiedSince filtering and early string-search pruning.
- Raised export job success rate to 99.9% by building a dual-path Step Functions workflow with intelligent caching, robust validation, and dynamic routing between system-wide and selective exports.

UNIVERSITY OF HOUSTON | COURSE INSTRUCTOR

May 2023 - Aug 2023

- Designed and delivered a dynamic "Intro Computer Science" course to 150 students.
- Collaborated with 6 fellow instructors and the Head of the STEM Department to innovate curriculum development, enhancing educational outcomes.

PROJECTS

PORTFOLIO OPTIMIZER

Mean-variance asset-allocation engine

- Pulled one-year price history for VOO, NVDA, KO & GLD with yfinance; computed daily returns, covariance matrix and expected returns in Pandas/NumPy.
- Solved for the efficient-frontier portfolio via SciPy and simulated 10 000 random portfolios; optimal weights out-performed the S&P 500 by 13 % over 2023.

PASSWORD MANAGER

GUI-based password manager for secure storage and management of encrypted passwords.

- Built a WPF/XAML desktop password manager with a C# backend—intuitive add/edit/retrieve UI over encrypted credential stores.
- Secured data end-to-end using AES-encrypted SQL storage and custom CRUD logic, ensuring confidentiality and integrity.

NEURAL NETWORK

Neural network for handwritten digit recognition

- Engineered a Python-based neural network solution, honed for the MNIST dataset, that accurately discerned handwritten digits with an initial accuracy of 85%, showcasing deep learning.
- Implemented forward and backward propagation algorithms to optimize the neural network's weights and biases, enhancing model training efficiency over successive iterations.

ACTIVITIES

Society of Hispanic Professional Engineers - Member

Columbia Quant Group - Member