# Hans J. Montero

#### Personal Information

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#### **EDUCATION**

SEPTEMBER 2021 - OCTOBER 2022 Masters of Science in Computer Science

Concentration in SOFTWARE SYSTEMS

Columbia University - New York, NY

4.1 GPA

SEPTEMBER 2017 - APRIL 2021 Bachelor of Science in Computer Science

Minor in Applied Mathematics Columbia University - New York, NY

4.1 GPA, magna cum laude

Relevant coursework: Hypervisors, Operating Systems, Programming Languages, Distributed Systems, Computer Networks, Design with C++, Databases, Database System Implementation

#### SKILLS

Languages Technologies C++, C, Python, Golang, Bash, OCaml, Haskell, JavaScript, HTML/CSS Unix, Linux Kernel, Git, Amazon S3, Kafka, Cassandra, Graphite, Splunk, Google Cloud Platform, libGDX, Netty, MySQL, phpMyAdmin

#### **WORK EXPERIENCE**

IUNE 2022 -

Software Engineer II @ Google - New York, NY Cloud Techinfra, Microsecond Colossus Filesystem

Deliver low-latency and high-reliability SSD reads/writes. Reduce network-attached disk server CPU/memory utilization via remote direct memory access ops. Infrastructure written in C++.

MAY 2021 - AUGUST 2021

Software Engineering Intern @ Google - Remote Cloud Techinfra, Linux Kernel Networking: eBPF in Production

Introduced code profiling of packet classification and measurement eBPF programs in C/C++. Optimized eBPF programs to reduce per-packet processing time. Wrote Linux Kernel patch that provides fast storage for eBPF programs as a configurable optimization.

JUNE 2020 - AUGUST 2020

Cloud Sysinfra Platforms, SW Accelerators: XLS

Improved the DSL's functional frontend's support for type-parametricity (frontend written in Python). Added a validation feature that runs tests through frontend/IR execution engines and compares results. Implemented a QuickCheck mechanism for the DSL using the backend's C++ toolchain and a LLVM JIT.

MAY 2019 - AUGUST 2019

Software Engineering Intern @ **Bloomberg L.P.** – New York, NY *Communication Channels Systems Reliability* 

Helped develop a Chaos Engineering testing framework built in Python with Kafka and Cassandra. Created a reporting service for the chaos framework to present system and experiment metrics. Assisted in bug fixes and improvements for C++ and Python backend services.

#### TEACHING EXPERIENCE

SPRING 2023

Associate in Computer Science @ Columbia University - New York, NY cs4118: Operating Systems I

Co-teaching with Professor Jae Woo Lee.

FALL 2020 - SPRING 2022

Head Teaching Assistant @ Columbia University - New York, NY cs4118: Operating Systems I

Helped develop and maintain Linux kernel assignments: custom FIFO scheduler, disk-backed filesystem, syscalls for inspecting process state, in-kernel data structures requiring use of synchronization mechanisms. Upstreamed assignments for Linux releases 4.19.50 and 5.10.57. Led recitation sections that covered Linux kernel development.

FALL 2018 - SPRING 2022

cs3157: Advanced Programming

Known as Columbia's "Systems Programming Course with a Narrative". Sysadmin for Linux server students work on (handled student onboarding, updated daemon services). Maintained lab grading scripts written in Bash.

**SPRING 2021** 

cs4115: Programming Languages and Translators

Advised teams on their language design and compiler project in OCaml/LLVM.

SUMMER 20{21,22}

cs4995: C++ for C Programmers

Helped develop new class materials (assignments, exams, infrastructure).

MAY 2018 - DECEMBER 2018

Learning Advisor @ Codecademy - New York, NY Online Pro Intensive Courses

Support learners on a 1:1 basis in Java, Python, JavaScript, and HTML/CSS. Review project submissions on GitHub and provide code feedback for learners. Moderate Slack workspaces of over 300 learners and offer guidance as users complete courses and create supplementary learning materials.

### **SELECTED PROJECTS**

JANUARY 2019 - MAY 2019

rippl - Recursively Inferred Pure-functional Programming Language

Wrote a functional, strongly and statically typed programming language with four classmates. Compiler written in OCaml with C libraries and targets LLVM IR - Features: Hindley-Milner type system, lazy evaluation, list comprehensions.

**SUMMER 2020** 

pygrader - Generic grading framework for coding assignments

Created a grading framework in Python to help TAs grade more consistently and effectively. Used by Columbia teaching staff in cs4118 Operating Systems and cs4995 C++ for C Programmers.

#### RESEARCH EXPERIENCE

JUNE 2021 - FEBRUARY 2022

sslang - Sparse Synchronous Language

Collaborated with PL research group at Columbia on development of Sparse Synchronous Model. Implemented parsing, AST transformations, and lambda lifting modules for compiler in Haskell.

## **AWARDS**

FALL 2021 - SPRING 2022	Course Assistant Fellowship - Columbia CS Department Distinction awarded to few graduate- level course assistants for comprehensive experience.
June 2021	HSF Scholar - Hispanic Scholarship Fund
APRIL 2021	Excellence in Teaching and Service - Columbia CS Department Outstanding contributions to teaching and exemplary service to the Columbia CS Department and its mission.
APRIL 2021	Senior Marshal, Innovation and Enhancement Award - Columbia Uni. Improved the teaching and curriculum of the Columbia CS Department
November 2019	Engineering Honor Society - Tau Beta Pi (NY Alpha Chapter)
MAY 2017	<b>Top 3 Coding Team</b> – St. Joseph's College HS Programming Competition Competed amongst 50 teams from the greater NYC area. Solved algorithm problems in Java and judged on program performance. Finished in 3rd Place.