Esteban I. Ramos

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Profile

Researcher in distributed systems focused on optimizing Microservices applications.

Education

University of California, Santa Cruz
Ph.D. Student, Computer Science, 2021 - Present
Emory University
B.S. in Computer Science   Minor in Applied Mathematics, 2019

Experience

Graduate Student Researcher, Fall 2021 - Present
Language, Systems, and Data Lab at UCSC

- Work under Dr. Peter Alvaro in the intersection of distributed systems, networks, and operating systems

- Research techniques to reduce end-to-end request latency in Microservices applications and mitigate request latency variability by leveraging accelerator hardware and novel interconnect technologies such as CXL

Nera Systems, Remote, California, USA, Summer 2024

- Developed a transpiler for transforming standard Python source code into equivalent source code compliant with Fully Homomorphic Encryption(FHE) constraints

- Established compilation and execution pipeline with configurable code transformations and optimizations that enabled programs to execute over TFHE scheme compliant encrypted data supported by software and FPGA based backends

Intel Corporation, Santa Clara, California, USA, Summer 2022
Graduate Software Engineering Intern

- Worked on RPC offload to Intel's Infrastructure Processing Unit (IPU)

- Significantly reduced latency through low level profiling and testing to reach zero-copy request/reply flow in gRPC offload prototype

- Final workshop publication at APSys2024

NCR Corporation, Atlanta, Georgia, USA, Spring 2020- Fall 2021
Software Engineer

- Worked as a full-time Software Engineer in an experienced team using Agile methodology on a Microservices based series of Java applications deployed on Kubernetes with Apache Beam integration

- Aided in the design and development of a configurable schema-flexible ETA ingestion platform for batch and stream processing of large numbers of customer records

Undergraduate Student Researcher Fall 2019
SimBioSys Lab at Emory University

- Worked with Dr. Arnold of Emory University on research exploring the simulation of exascale HPC programs

- Researched synthesizing of traces of HPC motifs/patterns to benchmark systems on a system upscaling simulator

Verint Systems, Atlanta, Georgia, USA, Summer 2019
Software Engineering Intern

- Developed a RESTful API in Java that facilitated querying of internal status information of a complex integration component in a largely self led project that was pushed into production after completion

Publications and Awards

NotNets: Accelerating Microservices by Bypassing the Network
In Proceedings of the 15th ACM SIGOPS Asia-Pacific Workshop on Systems (APSys '24)
Association for Computing Machinery, New York, NY, USA, 67–73. https://doi.org/10.1145/3678015.3680494
Split gRPC: An Isolation Architecture for RPC Software Stacks
In Proceedings of the 15th ACM SIGOPS Asia-Pacific Workshop on Systems (APSys '24)
Association for Computing Machinery, New York, NY, USA, 81–87. https://doi.org/10.1145/3678015.3680484
MCM/ICM: The Interdisciplinary Contest in Modeling(COMAP), Spring 2019
Outstanding Winner

- Competed with Emily Rexer and Ishan Saran in the MCM/ICM 2019 and chosen as one of the 19 Outstanding Winners out of 11,000 participating teams and for publication
- Paper published in the Fall 2019 Edition of the UMAP Journal, as A Monetary Evaluation of Ecosystem Services

Programming Skills

Languages: Proficient in C, C++, Go, SQL, Java; Experience with Rust, Python, JavaScript, MATLAB, x86 Assembly

Frameworks/Tools: Proficient in UNIX, linux-perf, Kubernetes; Experience with Lockfree programming, Kani (Rust-based mechanized verification tool), Valgrind, SpringFramework, Apache Beam, Gradle, Maven, Google Cloud Platform

Relevant Coursework Distributed Systems, Compilers, Networks, Design of Database Systems, Systems Programming, Mathematical Modeling, Computer Security, Assembly Programming, Algorithms, Cryptography, Numerical Analysis