Omar S Navarro Leija, PhD

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tags: s*ystems programming, Rust, Linux programming interface*

Work Experience

Fall 2022 - Present **Bolt Labs |** Senior Software Engineer

- Implement REST API for wallet-as-a-service cloud infrastructure using a modern Rust stack (axum, tokio, sqlx, tracing).
- Implement secure enclave for security critical computation using AWS Nitro Enclaves.
- Collaborate with cryptographic engineers and researchers to implement threshold signing distributed protocols (MPC ECDSA).
- Primary maintainer of CI/CD infrastructure for company's repositories.

Summer 2021 **Microsoft Research |** Research Intern
Demikernel: a libOS providing microsecond latencies over a range of kernel-bypass technologies for datacenters.
Project: Implement RDMA support for Demikernel.

Summer 2020 **VMware Research |** Research Intern
Differential Datalog: an incremental typed Datalog Rust engine built on top of a timely dataflow computation model.
Project: Performance profiling to understand parallel scaling of DDlog programs.

Summer 2019 **Mozilla Corporation |** Research Intern
Servo: a highly-concurrent, experimental, web browser engine implemented in Rust.
Project: Reducing intermittent test failures in Servo via lightweight record-and-replay for message passing channels.

Summer 2015 **NASA, Goddard Space Flight Center |** Scientific Computing Intern

2014 - 2016 **UNLV Han Lab |** Bioinformatics Research Assistant

Education

2016 - 2022 **University Of Pennsylvania |** PhD, Computer Science
Dissertation: Leveraging System Call Interposition for Low-level Process Manipulation

2016 - 2017 **University Of Pennsylvania |** MSE, Computer Science

2011- 2016 **University of Nevada, Las Vegas |** BS, Computer Science, Math Minor

Skills

Programming Languages: Rust, C, Python, C++, Haskell, Java
Technologies: Github Actions, Docker + Compose, postgreSQL
Expertise in systems programming and the Linux programming interface

Languages Spanish (Native)

Publications (Computer Science)

SOSP *Demikernel Datapath OS Architecture for Microsecond-scale Kernel-bypass Systems*
Irene Zhang, Amanda Raybuck, Pratyush Patel, Kirk Olynyk , Jacob Nelson, Omar S Navarro Leija, Ashlie Martinez, Jing Liu, Anna Kornfeld Simpson, Sujay Jayakar, Pedro Henrique Penna, Max Demoulin, Piali Choudhury, Anirudh Badam | SOSP 2021

Formal Methods System Design *Static detection of uncoalesced accesses in GPU programs*
Rajeev Alur, Joseph Devietti, Omar S. Navarro Leija, Nimit Singhania | Formal Methods in System Design 2021

ASPLOS *Reproducible Containers*
Omar S Navarro Leija, Kelly Shiptoski, Ryan Scott, Ryan Newton and Joseph Devietti | ASPLOS 2020

OOPSLA *A Monad for Deterministic Parallel Shell Scripting*
Ryan Scott, Omar S Navarro Leija, Joseph Devietti, and Ryan R Netwon | OOPSLA 2017

CAV *GPUDrano: Detecting uncoalesced accesses in GPU programs*
Rajeev Alur, Joseph Devietti, Omar S Navarro Leija, and Nimit Singhania | CAV 2017

Publications (Other)

2019 *Transcriptome analyses of tumor-adjacent somatic tissues reveal genes co-expressed with transposable elements*
Nicky Chung, GM Jonaid, Sophia Quinton, Austin Ross, Corinne E Sexton, Adrian Alberto, Cody Clymer, Daphnie Churchill, Omar S Navarro Leija, and Mira V Han | Mobile DNA 2019

2016 *Measuring accelerated rates of insertions and deletions independent of rates of nucleotide substitution*
Omar S Navarro Leija, Sanju Varghese, and Mira V Han | Journal of Molecular Evolution 2016

2016 *Agile multiscale decompositions for automatic image registration*
James M Murphy, Omar S Navarro Leija, and Jacqueline Le Moigne | Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXII 2016