

Overview

I am a systems researcher with expertise in the Rust programming language, Linux programming interface, and systems programming.

tags: *Rust, systems programming, Linux programming interface*

Education

- 2016-
Summer 2022** **PhD Computer Science**
University Of Pennsylvania | Advised by Joseph Devietti
- 2016-2017** **MSE Computer Science**
University Of Pennsylvania
- 2011-2016** **BS Computer Science | Math Minor**
University of Nevada, Las Vegas

Work Experience

- Summer 2021** **Microsoft Research, Redmond**
Research Intern
Demikernel is a libOS abstraction providing microsecond latencies over a range of kernel-bypass technologies used in datacenters.
Project: Designed and implemented the RDMA libOS for Demikernel in Rust.
- Summer 2020** **VMware Research**
Research Intern
Differential Datalog (DDlog) is a bottom-up, incremental, typed Datalog Rust engine built on top of a timely dataflow computation model.
Project: Performance profiling to understand parallel scaling for DDlog programs.
- Summer 2019** **Mozilla Corporation**
Research Intern
Servo is a highly-concurrent, experimental, web browser engine implemented in Rust. Servo suffers from a high number of intermittent tests failures.
Project: Eliminating intermittent test failures in Servo via Tivo, a system for lightweight record-and-replay of message passing channels. Ideal for highly concurrent systems.
- Summer 2015** **NASA, Goddard Space Flight Center**
Software Engineer Intern
Novel algorithms for automatic image registration.
Project: Implemented a fast shearlet transform library in C. Extended *Toolbox for Automated Registration and Analysis* (TARA) to support shearlet-based algorithm.
- 2014 - 2016** **UNLV Han Lab**
Bioinformatics Research Assistant
Researched and published novel algorithms for phylogenetic and conservation score inference. Implemented such algorithms and data processing pipelines in C and Python.

Skills

- Programming** Rust, C, Python, Haskell, Java, C++
Systems Programming
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
- 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 Singhanian | 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

Awards

- 2017** NSF GRFP Fellowship
- 2016** UNLV Senior Design Competition: 1st Place
- 2016** Nasa GSFC Poster Presentation: 1st Place

Teaching

- 2019** **Colorado Gold Rust**
Instructor
Rust Bridge | Designed and taught workshop on the Rust programming language.

2019 & 2018 **University of Pennsylvania**

Instructor

CIS 198: Rust Programming | Designed curriculum and taught semester long course on the Rust programming language.

2017 **University of Pennsylvania**

Teaching Assistant

CIS 552: Haskell Programming