Omar S Navarro Leija

https://gatowololo.github.io

Overview

I am systems researcher with expertise in Linux systems programming and the Rust programming language. I emphasize applicability, implementation, and software engineering principles in my research.

tags: *Rust, systems programming, Linux programming interface, deterministic program execution*

Education

2016-2022 (Expected) **PhD Computer Science**
University Of Pennsylvania
Advisor: Joseph Devietti

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

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

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 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

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 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 Differential Datalog 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, C++, Python, Haskell, Java Linux Systems Programming
Languages	Spanish (Native)

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