Kelly Shiptoski

Email: kship@seas.upenn.edu
Github: https://github.com/krs85
Website: https://krs85.github.io

Statement

I am a systems programmer with knowledge in and experience with low-level systems development, the Linux programming interface, and the programming languages Rust, C++, and C.

Education

University of Pennsylvania / Ph.D. in Computer Science
2017 - Present, Advised by Joseph Devietti

University of Pennsylvania / M.S. in Computer Science
2017 - 2019, Graduated cum laude

Drexel University / B.S. in Computer Science, B.A. in Mathematics
2012 - 2017, Graduated cum laude

Experience

VMware Research Group / Research Intern
Summer 2020

Thomson Reuters / Software Engineering Intern
Summer 2016

Bentley Systems / Software Engineering Intern
Summer 2015

Independence Blue Cross / Software Engineering Intern
Summer 2014

Skills

Languages: Rust, C++, C

Linux Systems Programming

Projects

Process Cache

- A system for providing automatic caching of computation at the process level.
- Project lead designer and developer.

Distributed Differential Datalog (D3log) / VMware Research Group

- A typed Datalog Rust engine built upon a timely dataflow computation model extended to work across machines.
- Adapted the distributed API to allow for incremental, on-the-fly reconfiguration of the nodes within the network, improving fault tolerance.

Reproducible Containers (DetTrace)

- A container abstraction for Linux which guarantees reproducibility for any unmodified Linux program run through it.
- Extended the scheduler from serialized to parallel execution in system-call-free regions, reducing the overhead of compute-bound workflows to 2%.

Publications

Reproducible Containers

Omar S. Navarro Leija, **Kelly Shiptoski**, Ryan Scott, Baojun Wang, Nicholas Renner, Ryan Newton, and Joseph Devietti. International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS '20), March 2020.

Teaching

Graduate Teaching Assistant / Computer Architecture (CIS 501)
University of Pennsylvania, Spring 2019

Computer Science Instructor / Penn GEMS (Girls in Engineering, Math, and Science)
University of Pennsylvania, Summer 2018

Teaching Assistant and Recitation Coordinator / Intro to Computer Science (CIS 110)
University of Pennsylvania, Spring 2018