

# Drew Ripberger

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## EDUCATION

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### The Ohio State University

Columbus, OH

*Bachelors of Science in Computer Science and Engineering; GPA: 3.92*

*Aug. 2020 – Expected Dec. 2023*

*With Summa Cum Laude Honors*

## AWARDS

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### The Ohio State University Computer Science Department

Columbus, OH

*Shan and Qian Shan Kuo Endowed Scholarship*

*Award of \$2,000*

*Undergraduate Research Award*

*Award (1 of 2 recipients) of \$1,000*

## EXPERIENCE

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### Software Engineering Intern

Mar. 2020 – Aug. 2020

*Nirmata*

*San Jose, CA (remote)*

- Worked to help develop observability solutions to supply data upstream to Nirmata's Kubernetes management dashboard
- Used Go, eBPF and the Kubernetes API to construct a DaemonSet that monitors a cluster's network
- Presented the project to the CEO, CTO and VP of Engineering and wrote the project's announcement blog post
- Spoke at KubeCon + CloudNativeCon North America 2020 about my work developing kube-netc and entering the Kubernetes space: "A High-Schooler's Guide to Kubernetes Network Observability"

### Summer Research Intern

Apr. 2021 – Aug. 2021

*HyperThought Group at Ohio State*

*Columbus, OH (remote)*

- Created infrastructure for parsing and storing unstructured image metadata using Python
- Developed code to detect defects in metals from electron microscopy images using OpenCV
- Collaborated with the Air Force Research Labs to interface and upload images and metadata onto the HyperThought system for further analysis and identification
- Assisted in writing an extended abstract and talk for Microscopy & MicroAnalysis 2021 on how HyperThought can help doing large scale analysis of microscopy data

### Undergraduate Research Intern

Jun. 2022 – Aug. 2022

*Microsoft Research*

*Redmond, WA (remote)*

- Learned about zkSNARKs, proof systems, and other cryptographic primitives while being mentored by Dr. Srinath Setty
- Worked with Dr. Setty on demonstrating and understanding the efficacy of incremental SNARKs
- Created a provable end-to-end banking transaction processing library in Rust based on recently published Nova recursive SNARKs
- Wrote constraints to encode operations on merkle trees and signature verification into R1CS circuits

### Software Engineering Intern, Performance and Scale Team

May 2023 – Aug. 2023

*Red Hat*

*Boston, MA (remote)*

- Worked on evaluating the Trimaran load-aware scheduler for use in Red Hat Open Data Science (RHODS)
- Designed large scale tests to evaluate the Trimaran scheduler under heavily load and in massive clusters
- Collaborated with the Performance and Scale Team and IBM Research to determine optimal use cases for the various scheduling strategies
- Used systems automation tools including Ansible and Python to coordinate reproducible and open source tests

## PROJECTS

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### kube-netc | *Go, Docker, Prometheus, Kubernetes, eBPF, TravisCI*

Mar. 2020 – Aug. 2020

- An open source network observability tool for tracking network statistics across Kubernetes clusters
- Utilized eBPF to pull raw networking data from Linux containers
- Created Go libraries to process and expose the networking data as Prometheus metrics
- Was the focus of my 6 month internship at Nirmata
- The source code may be found on the GitHub repository: <https://github.com/nirmata/kube-netc>

## TECHNICAL SKILLS

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**Languages:** Rust, C/C++, Java, L<sup>A</sup>T<sub>E</sub>X, JavaScript, SQL, Python

**Tools & Systems:** Git, Docker, eBPF, Linux, Prometheus, Kubernetes

## PUBLICATIONS

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- [1] Y. Gan, X. Ren, D. Ripberger, S. Blanas, and Y. Wang, “IsoDiff: Debugging Anomalies Caused by Weak Isolation,” *Proc. VLDB Endow.*, vol. 13, no. 12, pp. 2773–2786, Jul. 2020, ISSN: 2150-8097. DOI: 10.14778/3407790.3407860.
- [2] D. Ripberger, Y. Gan, X. Ren, S. Blanas, and Y. Wang, “IsoBugView: Interactively Debugging Isolation Bugs in Database Applications,” *Proc. VLDB Endow.*, vol. 15, no. 12, pp. 3726–3729, 2022.
- [3] Y. Hui, D. Ripberger, X. Lu, and Y. Wang, “Learning Distributed Protocols with Zero Knowledge,” in *Machine Learning for Systems 2023*, 2023.