

# Alex Merenstein

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<b>Contact</b>	(267) 886-3397	mmerenstein@cs.stonybrook.edu
<b>Education</b>	<b>Stony Brook University</b> , Stony Brook, NY <i>Ph.D., Computer Science</i> Filesystems and Storage Lab, advised by Professor Erez Zadok	<b>August 2018–present</b> GPA 3.91
	<b>The Johns Hopkins University</b> , Baltimore, MD <i>M.S., Computer Science</i>	<b>December 2016</b> GPA 3.90
	<b>Lehigh University</b> , Bethlehem, PA <i>B.S., Computer Engineering</i>	<b>May 2014</b> GPA 3.84 (summa cum laude)
<b>Publications</b>	<b>CNSBench: A Cloud Native Storage Benchmark</b> <u>Alex Merenstein</u> , Vasily Tarasov, Ali Anwar, Deepavali Bhagwat, Julie Lee, Lukas Rupprecht, Dimitris Skourtis, Yang Yang, Erez Zadok 19th USENIX Conference on File and Storage Technologies (FAST '21)	
	<b>The Case for Benchmarking Control Operations in Cloud Native Storage</b> <u>Alex Merenstein</u> , Vasily Tarasov, Ali Anwar, Deepavali Bhagwat, Lukas Rupprecht, Dimitris Skourtis, and Erez Zadok 12th USENIX Workshop on Hot Topics in Storage (HotStorage '20)	
<b>Relevant Experience</b>	<b>Stony Brook University</b> , Stony Brook, NY <i>Research Assistant</i> Member of the Filesystems and Storage Lab (FSL). Research focuses on storage for cloud native environments. Developed a benchmark framework for evaluating storage performance in new cloud native environments, and a file system tailored for Function as a Service (FaaS) applications. Also contributed to a project using natural language processing techniques to process technical specifications. Responsible for managing undergraduate and masters students contributing to these research projects.	<b>August 2019–Present</b>
	<b>IBM Research—Almaden</b> , Remote <i>Research Intern</i> Implemented a benchmarking tool for Kubernetes that allows users to evaluate the performance of different storage configurations in realistic cloud native conditions.	<b>May 2020–August 2020, May 2021–August 2021</b>
	Developed FUSE based file system tailored for Function as a Service (FaaS) applications. Additionally wrote CSI driver for using the file system with Kubernetes workloads and modified an open source (FaaS) platform to allow using the file system with FaaS applications.	
	<b>Stony Brook University</b> , Stony Brook, NY <i>Teaching Assistant</i> Teaching assistant for CSE 331 <i>Computer Security Fundamentals</i> , and for CSE 320 <i>System Fundamentals II</i> . Responsible for grading and holding office hours.	<b>August 2018–May 2019</b>
	<b>Johns Hopkins Applied Physics Laboratory</b> , Laurel, MD <i>Associate Professional Staff</i> Contributor on several computer security related research projects. Developed code mainly in C and Python, also served in a technical lead role for some projects.	<b>June 2014–August 2018, May 2019–August 2019</b>
	<ul style="list-style-type: none"><li>• <b>Linux kernel rootkit detector</b>, June 2014 – August 2018: Contributed code in C (user, kernel, and hypervisor components), Python, Ruby, and Prolog. Man-</li></ul>	

aged the project's continuous integration infrastructure which included Jenkins and OpenStack. Helped deploy the tool to real world networks. For roughly two years served as the project's technical lead; responsibilities included managing the technical team and giving presentations to management and customers.

- **Virtual machine based record and replay**, April 2016 – August 2018: Developer on a KVM/QEMU based record and replay framework used for malware analysis and software debugging. Contributed to both hypervisor and userspace components in C, Python, and Javascript. Assisted in using the framework to analyze real world malware.
- **Security requirements development**, August 2017 – August 2018: Developed security requirements for a large software system. Designed test cases and scenarios to prove the need for specific requirements, implemented requirements in test environment to prove their efficacy and feasibility.
- **Workflow automation**, June 2014 – May 2017: Automated standard security workflows consisting of multiple commercial security products. Identified capability gaps in existing products that prevented automation. Also helped pilot automated workflows at a large financial institution and led automation effort at a government security operations center. Development was mostly in Python, with some Java.

**Johns Hopkins Applied Physics Laboratory**, Laurel, MD

*Intern*

**August–December 2012, May–August 2013**

Contributed to a tool used to detect malicious email attachments and browser downloads. Coded in C, Python, Bash, and PHP. Wrote install scripts that were used to deploy the tool on customer servers. Modified an open source hypervisor to implement new analysis features.

**Lehigh University**, Bethlehem, PA

*Senior Design Project: Automatic door lock*

**August 2013–May 2014**

Collaborated with another student to build a door lock that used magnetic induction to communicate with a smartphone. The lock was controlled by an AVR microcontroller and was WiFi and Bluetooth enabled. Personally responsible for programming the microcontroller, designing a PCB for the lock electronics, and writing the Android app. and the PCB for the lock electronics. Project was chosen to participate in Lehigh's Undergraduate Research Symposium as well as the IEEE regional Morton Student Paper contest.

**Lehigh University**, Bethlehem, PA

*Classroom assistant*

**August–December 2011**

Classroom assistant for *Applied Engineering Computing Methods*. Duties included grading student work and helping students complete assignments. Class covered programming with MATLAB and building circuits with Arduinos.

**Talks**

**CNSBench: A Cloud Native Storage Benchmark** FAST '21

**The Case for Benchmarking Control Operations in Cloud Native Storage** HotStorage '20

**Undergraduate Research Symposium** Lehigh University 2014

**Skills**

**Programming Languages:** C, Python, Java, bash, Go

**Technologies:** git, Docker, Kubernetes, OpenWhisk, Jenkins, Linux kernel development, hypervisor development, Intel x86 architecture, Agile development practices, Linux system administration.