

Puneet Mehrotra

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Education

PhD in Computer Science, University of British Columbia

January 2020 - Current

Supervisor: Prof. Margo Seltzer

M.Sc. in Computer Science, University of British Columbia

September 2017 - December 2019

Supervisor: Prof. Ivan Beschastnikh

B.E.(Hons.) in Computer Science, Birla Institute of Technology and Science, Pilani - India

August 2008 - May 2013

GPA: 8.07/10

Research Experience

Best Practices in Benchmarking Graph Processing Systems

University of British Columbia

NETWORKS, SYSTEMS, AND SECURITY LAB

March 2019 - Current

- Benchmarked graph processing systems - Galois, GraphChi, Ligra and Gemini - on popular datasets and benchmarks (PageRank, Connected Components, Triangle Counting, and Breadth First Search) to understand how the statistical properties of the dataset latently affects the performance of these systems
- Identified a set of best-practices that must be followed to get meaningful performance numbers from graph processing systems

Graduated Access Control on Remote Devices

University of British Columbia

NETWORK, SYSTEMS, AND SECURITY LAB

January 2018 - April 2019

- Uses **Linaro OP-TEE** to manage fine-grained and trackable access to data on remote devices by linking the data to its access policy and encrypting them together
- Leverage **FUSE** to intercept operations on encrypted files to facilitate their on-demand decryption and re-encryption using the trusted application running in the Secure World.
- Prototype written in **C** using a **LeMaker Hikey** board with **ARM TrustZone** and Linux 4.15.

Teaching Experience

Graduate Teaching Assistant - Advanced Operating Systems, UBC

September 2019 - December 2019

- This course is an introduction to operating systems research and involves reading a collection of papers spanning the history of operating systems, to gain the requisite context to undertake a research project in the broad area of Computer Systems.
- Held recitals to give students an introduction into the relevant OS concepts; Helped students plan and execute their class project

Graduate Teaching Assistant - Software Engineering Course, UBC

September 2017 - April 2018

- Managed two teams implementing a self-service tool for Uniserve clients and IT support staff. The tool allows the IT staff to manage their devices and see real time information about their network health and usage trends.
- Supervised student teams implementing a self-checkout and payment portal for ChainXY.

Work Experience

Member of Technical Staff - II, NetApp Inc. - Bangalore, India

July 2015 - July 2017

- Designed and implemented RussianRiver – a tool to validate and set host multipath settings for **NetApp SAN**
- Worked on Unified Host Utilities Kits for Linux and Unix – a tool for checking the health of storage on the OS when connected to NetApp storage controllers. It provides path and state information for all NetApp LUNs present on a host by issuing queries to the Host Bus Adapter API libraries.
- Handled infrastructure orchestration and configuration management for interop QA infrastructure.
- Designed and developed SAN Host Remediation Tool that automates the tasks to be performed on hosts when the storage migrates from NetApp 7Mode Data ONTAP to Cluster Data ONTAP. Supports all major host OS variants

Member of Technical Staff – I, NetApp Inc. – Bangalore, India

July 2013 - July 2015

Engineering Intern at NetApp Inc. – Bangalore, India

Jan. 2012 - Feb. 2013

- Designed and developed iLAB – a framework that handles dynamic testbed creation, resource allocation and initialization, test execution, and tear-down. Increased execution efficiency by 95%; Wrote as a self-service web UI for iLAB in **Django**
- Wrote **Python** and **Perl** scripts and libraries to test the interoperability of new Linux host and Data ONTAP features
- Wrote **SystemTap** scripts to capture additional details during regression testing – I/O latency, CPU utilization, Multipath Queue Depths, etc

Academic Projects

Revelio: Detection and Mitigation of Security Vulnerabilities 

Spring 2018

CPSC 507: ADVANCED SOFTWARE ENGINEERING

University of British Columbia

- Revelio statically analyses **Python** code for known vulnerabilities. It has the following features:
 - Detection and updation of vulnerable functions and outdated dependencies with safe alternatives
 - Automatically running tests to verify update didn't break code.
 - Downloading and analyzing of GitHub repositories as well as local files, and automatically creating pull-requests to GitHub repositories to fix vulnerable functions

Programmable Networks for Optimizing Big Data Computations

Spring 2018

CPSC 521: PARALLEL ALGORITHMS AND ARCHITECTURES

University of British Columbia

- Performed a literature survey to understand the state-of-art in data processing systems that operate at a massive scale
- Proposed ways to optimize scheduling and sharding through the use of programmable networks in the datacenter

Analyzing Large System Software with Symbolic Execution

Fall 2018

CPSC 513: INTRODUCTION TO FORMAL VERIFICATION

University of British Columbia

- To understand the usability of existing symbolic execution tools for verification of system software, we ran KLEE on Snort - an open source Intrusion Detection System. Was able to get high coverage on the relevant pieces of Snort code

Honors & Awards

2018-19 International Tuition Award

UBC, Vancouver

2019 USENIX NSDI Student Grant

Boston, MA

Presentations and Posters

UBC Cybersecurity Summit

Vancouver, BC

PRESENTER

May 2018

- Introduced work on graduated access control on remote devices. 

Program Committees

2019 CS-Can Student Symposium

Montreal