Puneet Mehrotra

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Summary

Software engineer with five years of experience seeking full-time system software engineering roles. Prior experience in kernel development, database storage design, and scalable graph processing systems.
Does not need work authorization in Canada (Citizen).

Experience

Systopia Lab @ University of British Columbia January 2020 – Present
PhD Candidate *Vancouver, Canada*

- Designed FlexoGraph: an ACID-compliant Graph Database that uses WiredTiger as the storage engine that performs better than existing specialized graph processing systems or graph databases. We provide multiple optimized data layouts, persist algorithmic state for bootstrapping future computations on new snapshots, and use lockless algorithms
- Studied the implications of translation architecture on the performance of SMR drives and showed that a host-based log-structured translation layer can reduce the p99 latency by 50×.
- Benchmarked graph processing systems to understand the latent impact of statistical properties of the datasets on the performance of these systems and identified a set of best practices for benchmarking graph processing systems

Systopia Lab @ University of British Columbia August 2017 – October 2019
Graduate Research Assistant *Vancouver, Canada*

- Use 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; written in C using ARM TrustZone and Linux 4.15

Member of Technical Staff June. 2012 – July 2017
NetApp Inc. *Bangalore, India*

- Worked on Unified Host Utilities Kits for Linux and Unix – a tool for checking the storage health, path, and state information for all NetApp LUNs mounted on a host by issuing queries to the Host Bus Adapter API libraries
- Developed the Common Interop Testsuite for testing the interoperability of new Linux host and ONTAP features
- Designed and developed a framework to automate testbed orchestration and configuration, test execution, and tear-down. Increased execution efficiency by 95%
- Contributed to tools for validating and setting host multipath settings for NetApp SAN

Education

University of British Columbia Vancouver, Canada
Ph.D. in Computer Science *January 2020 – Current*

University of British Columbia Vancouver, Canada
M.Sc. in Computer Science *Aug. 2017 – Nov. 2019*

BITS (Birla Institute of Technology and Science) Pilani, India
B.E. (Hons.) in Computer Science *Aug. 2008 – June. 2012*

Projects

FlexoGraph Database | *Implementation for my Ph.D. project with C++ and OpenMP*
Revelio: Detection and Mitigation of Security Vulnerabilities | *Python*
Analyzing Large System Software with Symbolic Execution | *KLEE and C*

Technical Skills

Languages: C/C++, Java, Python, SQL, Bash, Perl
Frameworks and Technology: OpenMP, GDB, perf, Intel VTune, Docker, Azure, AWS, Graph Databases
Database Internals: WiredTiger, RocksDB

Publications

Smooth Kronecker: Solving the Combing Problem in Kronecker Graphs GRADES-NDA, 2020
SoK: The Faults in our Graph Benchmarks arXiv:2404.00766