Peter Van Sandt

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WORK EXPERIENCE

Oct 2019 - Present **Dell-EMC Isilon**, *Senior Software Engineer*, Seattle, WA.

Jun 2018 - Oct 2019 *Software Engineer - Performance.*

2017 *Software Engineer Intern - Performance.*

- Designed and developed request handling from connection loop through parsing and dispatch to handlers to minimize copying data and branches for create, read, delete, and list operations in development of forthcoming protocol stack.
- Developed performance test plan and corresponding benchmarks to provide performance comparison and analysis during development of forthcoming protocol stack enabling the team to match the performance of an industry-leading NFS implementation.
- Researched and regularly presented performance and architectural analysis of academic and competing stacks to leadership team: focusing on concurrent creates in parallel file systems and throughput in object storage.
- Developed and extended non-intrusive, trace-based and low-overhead, distribution-based workload analysis tools with dtrace and SQL, so that customers could size their clusters 200x faster and support engineers could non-disruptively assess on-going workload distributions.
- Developed and extended automated performance analysis tooling with pandas: modeling read path on a distributed file system to highlight reads that use caches inefficiently, and identifying a 50% performance regression.
- Root cause analysis of performance issues in an NFS protocol stack and authentication reducing CPU utilization in hot spots and improve worst case performance.

Oct 2016 - May 2018 **University of Wisconsin-Madison, Computer Sciences**, *Undergraduate Researcher.*

- Developed interpolation search algorithms for uniform and non-uniform data to use constant factor improvements and the distribution of the data to improve throughput in numpy by 380% and LevelDB by 146%.
- Optimized LevelDB by replacing use of mutexes in the fast-path for reads with copy-on-write version updates and lock-free LRU improving read throughput by up to 45%.

Jun 2016 - Aug 2016 **Jump Trading, LLC.**, *Software Developer Intern*, Chicago, IL.

- Eliminated algorithmic bottlenecks in 100KLOC internal application improving response time by 200%.
- Developed performance visualization and analysis tool for internal use.

EDUCATION

May 2018 **B.S., Computer Sciences, Honors, ΦBK**, *University of Wisconsin-Madison*, GPA: 4.0/4.0.

- Graduate Coursework: Advanced Algorithms, High Performance Computing, Distributed Systems
- Languages: C++, C, Python 2.7, dtrace, CUDA C

AWARDS

2019 Dell Global Storage Hackathon, Best in *AI/ML* and *Innovative Idea*

2019 Van Sandt, Peter, Yannis Chronis, and Jignesh M. Patel. "Efficiently Searching In-Memory Sorted Arrays: Revenge of the Interpolation Search?." *Proceedings of the 2019 International Conference on Management of Data.* 2019.

2017 DeWitt Undergraduate Scholarship for academic excellence and research in Computer Science

PERSONAL PROJECTS

2017 Developed B-tree index, buffer manager, and space efficient word search for database class covering database internals, design, and algorithms.

2016 Vectorized insertion and rank order sorts of fixed-size arrays using C and AVX2 intrisics.

2016 Developed text-record sorting utility using trie-based burst-sort in C winning as the fastest in a class of $\tilde{3}00$.

2012 Developed GPU-accelerated, Toom-Cook multiplication bignum library in C++, and CUDA C.