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| 4725 Denevi Drive,  San Jose, CA 95130 | **MURALI VILAYANNUR**  <https://www.linkedin.com/in/murali-vilayannur-8792472>  [**https://github.com/mnv104**](https://github.com/mnv104) | | | (C):(630) 814-9052  (H):(630) 748-0057 |
| **Employment** | | | | |
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| **Technical Lead/Software Engineer,**  **Facebook Inc.,**  **Apr 2016 – Present**,   * Member of the TAO/TACO engineering team that is responsible for the distributed social graph cache and ephemeral storage system for graph data with limited lifetimes. * Designed and rolled out a new flash engine format that allows for better retention of short-term data on TACO without premature eviction without compromising on flash burn-rate. The same engine has been used in other projects outside of TAO and TACO. * Had a significant role in rearchitecting several subsystems of TACO that netted in significant read and write SLA improvements in 2017 (over 5 9s of reliability!). * Technical lead and architect for next generation system called Zinc that provides an eventually consistent, distributed key-value cache for a proprietary key-value based replicated database system (ZippyDB). * Helped improve operational and engineering practices for the team to be able to move faster (Modularization of sub-systems, scripts for on-calls, Use modern C++ features, Fix flaky and broken unit/integration tests).   **Senior Technical Director,**  **PernixData Inc.**  **Mar 2012 – Apr 2016,**   * Founding engineer and lead architect at this start-up that delivers a distributed scale out software storage tier to complement a capacity tier of storage. * Designed, architected and implemented large portions of the FVP software stack to accelerate virtual machine I/O performance uisng RAM and direct-attached flash resources on ESXi hypervisor. * Immense contribution to the company’s IP portfolio and filed several patents and a paper at a reputed storage conference. | | | | |
| **Senior Staff Engineer**  **VMware Inc.,**  **Oct 2006 – Feb 2012,** |  | | |  |
| * Senior Technical Lead of the hypervisor storage team with a consistent track record of delivering key technical solutions and features like VMFS5 file system & space efficient desktop virtual disk format across multiple ESX releases. * Designed, proposed and implemented several innovations that led to patents and publications at prestigious academic conferences. * Mentored several interns on advanced development projects that also contributed to the company’s IP portfolio. | | | | |
| **Postdoctoral Staff**  **Argonne National Laboratory**  **Jun 2005 – Sep 2006** |  | | |  |
| * Co-designed, implemented and developed two generations of a popularly used open-source parallel file-system for Linux clusters (PVFS versions 1 and 2). | | | | |
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| **Education** | | | | |
| **The Pennsylvania State University** | **State College, PA** | | | **Aug 1999 – May 2005** |
| * Ph.D. in Computer Science & Engg.   **IIT-Varanasi Varanasi Jul 1995 - May 1999**   * B.Tech in Computer Science & Engg. | | | | |
| **Selected Patents** | | | | |
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| * Computer Storage Deduplication with Jinyuan Li, Irfan Ahmad and Austin Clements * Consistent unmapping of application data in presence of concurrent unquiesced writers and readers with Fraz Shaikh, Satyam Vaghani and Kiran Joshi * Hybrid Locking Using Network and On-Disk Based Schemes with Jinyuan Li, Mayank Rawat, and Dan Scales * File system introspection and Defragmentable Virtual Disk format for space efficiency with Satyam Vaghani, Krishna Yadappanavar, Manjunath Rajasekar, and Faraz Shaikh * In-place snapshots of a virtual disk configured with sparse extents with Krishna Yadappanavar and Faraz Shaikh * Avoiding physical fragmentation in a virtualized storage environment with Faraz Shaikh * Configuration-Less Network Locking Infrastructure for Shared File Systems with Jinyuan Li and Mayank Rawat * Improvements to a System Automatically Optimizing capacity between clusters of hosts with Irfan Ahmad, Jinyuan Li, Austin Clements and Carl Waldspurger * Optimistic Input/Output operations for clustered file-systems with Satyam Vaghani * Performing online, in-place upgrade of cluster file system with Jinyuan Li, Mayank Rawat and Satyam Vaghani * Method and System for ensuring cache coherence of meta-data in clustered file system with Satyam Vaghani and Jinyuan Li * Distributed Data Movement with Mayank Rawat, Jinyuan Li, and Chris Frost * Enforced Correct Ordering of Unmap and write commands at disk level for safe reclamation with Faraz Shaikh, Satyam Vaghani and Kiran Joshi * AWO: Modular Analysis Layer for Storage Workloads with Ali Mashtizadeh and Ricardo Koller | | | | |
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| Selected Publications | | | | |
| * Deepavali Bhagwat, Mahesh Patil, Michal Ostrowski, Murali Vilayannur, Woon Jung, Chethan Kumar. A practical implementation of clustered fault tolerant write acceleration in a virtualized environment, 13th USENIX Conference on File and Storage Technologies (**FAST 15**). * Philip Carns, Sam Lang, Robert Ross, Murali Vilayannur, Julian Kunkel, Thomas Ludwig. Small File Access in Parallel File Systems, IEEE International Parallel and Distributed Processing Symposium, **(IPDPS’09)**. * Austin Clements, Irfan Ahmad, Murali Vilayannur, Jinyuan Li. Decentralized Deduplication in SAN Cluster File Systems, Proceedings of the 2009 Annual USENIX Technical Conference, (**USENIX ATC’09)**. * Murali Vilayannur, Partho Nath, Anand Sivasubramaniam. Providing Tunable Consistency for a Parallel File Store, Proceedings of the Fourth USENIX Conference on File and Storage Technologies, (**FAST’05**).   Languages and Technologies | | | | |
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* C/C++: Expert/proficient
* Python/Java: Basic familiarity
* Other tools: MPI, Matlab, bash, sed, VMware suite of tools