

Post-doctoral Position in Distributed Storage Systems at the UT-ORNL Joint Institute of Computational Sciences (JICS)

The University of Tennessee (UT)-Oak Ridge National Laboratory (ORNL) Joint Institute of Computational Sciences (JICS) (<http://www.jics.utk.edu/>) is currently seeking a highly qualified candidate for a postdoctoral research position in “distributed storage systems”.

The successful candidate will work on the project is to study the utility of solid-state devices (SSD) within a supercomputer to expedite day-to-day HPC I/O. The research project will involve multiple facets of storage systems, including but not limited to

- Storage:
 - Solid-state devices,
 - Aggregate storage systems,
 - Parallel file systems,
 - Caching,
 - Performance analysis of storage systems
- HPC Operations:
 - scientific data management,
 - supercomputing I/O operations
 - data staging,
 - checkpointing,
 - offloading,
 - parallel I/O,
 - data availability
- Scheduling access to storage systems

The successful candidate will work closely with research staff in JICS and Computer Science and Mathematics Division (CSMD) to develop better storage and I/O management techniques for the supercomputer storage subsystems and beyond. The successful candidate will have an opportunity to address and improve the I/O bandwidth bottleneck problem for peta and exascale storage systems.

Duties and responsibilities include:

- Work with staff to understand and build on existing distributed storage software
- Develop novel storage abstractions using SSDs
- Contribute ideas and code to numerous areas therein: caching, data availability, storage virtualization
- Analyze and improve day-to-day supercomputing I/O such as checkpointing, staging and offloading
- Write production quality software
- Proactively publish ideas and results in scientific conferences and journals

Desired qualifications:

- A Ph.D. in Computer Science with specialization in storage or file systems with a strong publication record
- Experience working with SSDs
- Extensive systems programming background using the C programming language
- Network programming: extensive socket-based programming
- Experience with the development of distributed storage systems or file systems: LUSTRE or PVFS development
- I/O scheduling, Virtual File System, file system drivers, file system caching

- Parallel I/O libraries
- Hands-on experience with any of the above a definite plus!
- Linux kernel development experience (scheduling, networking, memory management) preferred.
- An understanding of the various supercomputing storage offerings: parallel file systems, mass storage (HPSS); Hand-on experience with the above systems a definite plus!
- I/O bandwidth performance optimization/tuning, debugging of complex distributed systems software
- An understanding of I/O operations in the context of supercomputing: data staging, checkpointing, offloading, etc.
- Ability and desire to articulate ideas and scientific findings in peer-reviewed conferences
- Good communication skills: both written and spoken English

We are interested in hands-on researchers. Interested candidates can send their resumes, URLs with samples of existing publications to Sudharshan S. Vazhkudai: vazhkudaiss@ornl.gov