

Yufei Ren

1500 Stony Brook Rd
Office 365, CEWIT Building
Stony Brook, NY 11794

Phone: (631) 327 - 4334
Email: yufei.ren@stonybrook.edu
Web: <http://www.yufeiren.com/>

Education

Stony Brook University
Ph.D., Computer Engineering

Stony Brook, NY
2011 - 2015(expected)

Nanjing University
M.S., Software Engineering

Nanjing, China
2005 - 2007

Wuhan University
B.S., Software Engineering

Wuhan, China
2001 - 2005

Software Development Experience

Developer and Research Assistant, Stony Brook University June 2010 - Now

- Design and implement **RFTP** - an RDMA based high performance data transfer software. RFTP makes use of a hybrid software architecture that combines event-driven and multi-threaded programming model to maximize RDMA bandwidth utilization and minimize CPU utilization. Linux TCP zero-copy interfaces, *sendfile* and *splice*, are also integrated into RFTP to accommodate network environments without RDMA supports. RFTP supports synchronous and asynchronous I/O model on disk access.
Online available: <http://ftp100.cewit.stonybrook.edu/rftp/>
- Design and implement a **NUMA-aware cache** for iSCSI/iSER within Linux SCSI target framework (**tgtd**). On serving cached data in NUMA systems, the default Linux page cache incurs remote memory access in a large proportion of I/O requests handling. In contrast, this NUMA-aware cache schedules performing thread, source memory and destination memory into an identical NUMA node to eliminate the penalty of remote memory access among different NUMA nodes. For individual I/O requests in an under utilized iSCSI system, the average I/O latency is reduced about 23%. For data-intensive applications in a fully utilized iSCSI system, the aggregate throughput can be improved up to 80%.
- Design and implement **rperf**, an RDMA network benchmark. It's developed by extending **iperf**, a popular TCP/UDP bandwidth evaluation tool.
Online available: <http://ftp100.cewit.stonybrook.edu/rperf/>
- Open source contribution: Flexible I/O Tester - **fio**'s RDMA I/O engine and NUMA binding module.

Senior Engineer, E-Payment Research Institute, China UnionPay July 2007 - May 2010

- As a team leader, designed and developed a network access layer, including about 50,000 lines of source code in C, for an online payment system. Designed an application framework for several kinds of network protocols. The framework, based on **libevent**, implemented a master-worker thread pool paradigm and a network event scheduling mechanism.
- As a software developer, responsible for network application development, database tuning in an online transaction processing payment system.

Intern, Samsung Electronics (China) R&D Center

July 2006 - May 2007

- Responsible for unit testing and integration testing. Design and implement unit test cases and integration test cases for components of a Linux-based mobile platform. Implement 301 unit test cases and 58 integration test cases for 60 APIs. Develop unit test cases for a digital TV software platform based on embedded Linux system.

Refereed Publications

Yufei Ren, Tan Li, Dantong Yu, Shudong Jin, Thomas Robertazzi, “**Design, Implementation, and Evaluation of a NUMA-Aware Cache for iSCSI Storage Servers**”, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, Accepted.

Yufei Ren, Tan Li, Dantong Yu, Shudong Jin, Thomas Robertazzi, “**Design and Performance Evaluation of NUMA-Aware RDMA-Based End-to-End Data Transfer Systems**”, In *Proceedings of the International Conference on High Performance Computing, Networking, Storage and Analysis (SC '13)*, Denver, Colorado, November 2013.

Tan Li, **Yufei Ren**, Dantong Yu, Shudong Jin, Thomas Robertazzi, “**Characterization of Input/Output Bandwidth Performance Models in NUMA Architecture for Data Intensive Applications**”, In *Proceedings of the International Conference on Parallel Processing (ICPP '13)*, Lyon, France, October 2013.

Yufei Ren, Tan Li, Dantong Yu, Shudong Jin, Thomas Robertazzi, “**Design and Testbed Evaluation of RDMA-based Middleware for High-performance Data Transfer Applications**”, *Journal of Systems and Software, Volume 86, Issue 7, July 2013, Pages 1850-1863, ISSN 0164-1212, 10.1016/j.jss.2013.01.070*.

Yufei Ren, Tan Li, Dantong Yu, Shudong Jin, Thomas Robertazzi, Brian L. Tierney, Eric Pouyoul, “**Protocols for Wide-Area Data-intensive Applications: Design and Performance Issues**”, In *Proceedings of the International Conference on High Performance Computing, Networking, Storage and Analysis (SC '12)*, Salt Lake City, Utah, November 2012.

Yufei Ren, Tan Li, Dantong Yu, Shudong Jin, Thomas Robertazzi, “**Middleware Support for RDMA-based Data Transfer in Cloud Computing**”, In *Proceedings of the High-Performance Grid and Cloud Computing Workshop*, Shanghai, China, May 2012.

Poster

End-to-End Data Transfer Systems for 100 Gbps Networks and Beyond
Doctoral Showcase, SC '13, Denver, Colorado, November 2013.

Skills

Familiar with UNIX/Linux System C programming, socket network programming, TCP/IP stack, and networking open source tools (such as libevent).
Familiar with RDMA asynchronous network programming on top of RDMA Communication Manager librdmacm and InfiniBand Verbs libibverbs.
Familiar with multi-threaded programming (pthread).
Familiar with memory management programming in NUMA architecture with libnuma.
Familiar with Shell programming, GNU Libtool, Makefile, Git, gdb, valgrind.
Familiar with Oracle Tuxedo WorkStation (ATMI programming).
System administration and configuration: Lustre file system, iSCSI/iSER, Ganglia, and OFED.

Teaching Experience

Teaching Assistant, Local & Wide Area Networks, Stony Brook University Jan. 2012 - May. 2012
Teaching Assistant, Operating System, Nanjing University Sep. 2005 - Dec. 2005

Awards and Honors

Best Researcher and Developer Award of China UnionPay Co. Ltd	2010
Best New Employee Award of China UnionPay Co. Ltd	2009

Social

Volunteer Student of IEEE/ACM SuperComputing Conference 2011