NAVEEN N RAVICHANDRASEKARAN

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SUMMARY

Professional Software Engineer with experience in the general areas of parallel and distributed computing. Specifically, my technical skills focus on the following areas: (i) parallel programming models and runtime systems (MPI and Partitioned Global Address Space models like OpenSHMEM, Global Arrays, and Coarray Fortran); (ii) parallel computing architectures (Cray Supercomputers and Clusters, multi-core systems, GPUs and Intel MIC), and (iii) high-speed interconnect libraries(DMAPP)

EDUCATION

University of Houston, Main Campus *December 2015*
M.S. in Computer Science - Specialization in Parallel & Distributed Systems

Anna University, India *May 2011*
Bachelors in Engineering - Electrical & Electronics Engineering

EXPERIENCE

Cray, Inc 12/26/2015 - Present
Software Engineer - Programming Environment Message Passing Toolkit *Saint Paul, MN*

· Software Enhancements and Parallel Optimizations for Cray Supercomputer and Cluster environments
· Work specifically on Cray software stacks like Cray MPI, Cray SHMEM, and Global Arrays
· HPC and parallel programming runtime optimizations for Cray hardware to be utilized by specific customers like U.S government and commercial petroleum industries
· Participate and represent Cray in OpenSHMEM standards committee

Cray, Inc 05/18/2015 - 12/25/2015
Intern - Programming Environment Message Passing Toolkit *Saint Paul, MN*

· Research, Prototype, and Implement new features in Cray SHMEM programming library
· Optimize Global Arrays library for NAMD and NWChem Chemistry applications

University of Houston 09/14/2013 - 05/15/2015
Research Assistant - HPC Tools *Houston, TX*

· Research Assistant to Dr.Barbara Chapman(Chair, Computer Science & Mathematics(CSM) Group - Brookhaven National Laboratory)
· Research and explore strategies for runtime optimizations, and compiler-tools interactions for large-scale parallel systems using OpenSHMEM and Coarray Fortran programming models

Cognizant Technology Solutions 06/23/2011 - 07/12/2013
Programmer Analyst *Chennai, India*

· Design parallel test framework to validate bank statements for a leading financial services company

TECHNICAL STRENGTHS

Computer Languages	C/C++, Fortran, Java, Python, Ruby, Scala
Parallel Programming Models	OpenSHMEM, OpenMP, MPI, Coarray Fortran
Network Libraries	DMAPP
Architectures	Cray Supercomputers, & Clusters, Intel MIC

PROJECTS

Current Projects

1. **Cray SHMEM**
   - optimize and maintain Cray SHMEM for different platforms
   - implement new features as per the OpenSHMEM standards
   - propose and prototype new features like Communication Contexts, Symmetric Memory Partitions and Teams(PE-Subsets)
2. **Cray MPICH**
   - create an optimized message matching layer for the MPI implementation.
3. **Cray Global Arrays(Cray-GA)**
   - optimize and maintain the ComEx - DMAPP communication layer

Past Projects

1. **OpenSHMEM Reference Implementation**
   Project description: University of Houston worked with *Oak Ridge National Laboratory* to standardize OpenSHMEM via a community-driven specification with a reference implementation. **My contributions:** I have been particularly involved in the optimization of the collective communication performance.
2. **Coarray Fortran**
   Project description: Coarray Fortran is a set of new language features incorporated into the Fortran 2008 standard which enable parallel programming in Fortran with minimal changes to the language syntax. It is a joint project between University of Houston and *Total* **My contributions:** I am particularly involved in the optimization of the Coarray Fortran runtime library with new underlying communication layers.

REFEREED CONFERENCE AND WORKSHOP PUBLICATIONS

1. Naveen Namashivayam, Bob Cernohous, Krishna Kandalla, Dan Pou, Joseph Robichaux, James Dinan, and Mark Pagel. *"Symmetric Memory Partitions in OpenSHMEM: A case study with Intel KNL"*. In Proceedings of Fourth Workshop on OpenSHMEM and Related Technologies: Big Compute and Big Data Convergence, August, 2017, Annapolis, Maryland, USA.
2. Krishna Kandalla, Peter Mendygral, Nick Radcliffe, Bob Cernohous, Naveen Namashivayam, Kim McMahon, Chris Sadlo and Mark Pagel *"Current State of the Cray MPT Software Stacks on the Cray XC Series Supercomputers"*. In proceedings of Cray User Group Meeting, 2017, Redmond, Washington, USA.
3. Naveen Namashivayam, David Knaak, Bob Cernohous, Nick Radcliffe, and Mark Pagel. *"An Evaluation of Thread-Safe and Contexts-Domains Features in Cray SHMEM"*. In Proceedings of Third Workshop on OpenSHMEM and Related Technologies: Enhancing OpenSHMEM for Hybrid Environments, August, 2016, Hanover, Maryland, USA.
4. Naveen Namashivayam. *"OpenSHMEM as an Effective Communication Layer for PGAS Models"*. Master's Thesis, University of Houston, October, 2015.
5. Naveen Namashivayam, Deepak Eachempati, Dounia Khaldi and Barbara Chapman. *"OpenSHMEM as a Portable Communication Layer for PGAS Models - A Case Study with Coarray Fortran"*. In Proceedings of IEEE Cluster 2015, September, 2015, Chicago, USA.

6. Naveen Namashivayam, Dounia Khaldi, Deepak Eachempati and Barbara Chapman. *"Extending the Strided Communication Interface in OpenSHMEM"*. In Proceedings of Second OpenSHMEM Workshop: Experiences, Implementations and Tools, August, 2015, Annapolis, Maryland, USA.

7. David Knaak, and Naveen Namashivayam. *"Proposing OpenSHMEM Extensions Towards a Future for Hybrid Programming and Heterogeneous Computing"*, In Proceedings of Second OpenSHMEM Workshop: Experiences, Implementations and Tools, August, 2015, Annapolis, Maryland, USA.

8. Naveen Namashivayam, Sayan Ghosh, Dounia Khaldi, Deepak Eachempati, and Barbara Chapman. *"Native Mode-Based Optimizations of Remote Memory Accesses in OpenSHMEM for Intel Xeon Phi"*, 8th International Conference on Partitioned Global Address Space Programming Models (PGAS 2014).

KEY ACTIVITIES

1. *OpenSHMEM standardization Effort*, Participate and represent Cray Inc. in OpenSHMEM standards committee.

AWARDS AND ACCOMPLISHMENTS

1. *Best Paper Award*, 8th International Conference on Partitioned Global Address Space Programming Model(PGAS 2014).

2. *Graduate Assistant Tution Fellowship*, September 2013 - May 2015.

3. *Best Undergraduate Student Project*, Mepco Schlenk Engineering College, Anna University, India, 2011.