NAVEEN N RAVI

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SUMMARY

Professional Software Engineer with experience in the general areas of parallel and distributed computing. Specifically, my technical skills focuses in the following areas: (i) parallel programming models and runtime systems (MPI and PGAS models like OpenSHMEM, Global Arrays, and Coarray Fortran); (ii) parallel computing architectures, and (iii) high-speed interconnects

EXPERIENCE

Hewlett Packard Enterprise Jan,2020 - present
Systems/Software Engineer - Programming Environment Message Passing Toolkit *Bloomington, MN*

Cray, Inc Dec,2015 - Dec,2019
Software Engineer - Programming Environment Message Passing Toolkit *Bloomington, MN*

- HPC and parallel programming runtime optimizations for HPE/Cray supercomputer and cluster hardware to be utilized by specific customers like U.S government and commercial petroleum industries
- Work specifically on Cray software stacks like Cray MPICH and Cray SHMEM
- Participate and represent HPE/Cray in OpenSHMEM and MPI standards committee

Cray, Inc May,2015 - Dec,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 Sep,2013 - May,2015
Research Assistant - HPC Tools *Houston, TX*

- Research Assistant to Dr.Barbara Chapman
- Research and explore strategies for runtime optimizations, and compiler-tools interactions for large-scale parallel systems using OpenSHMEM and Coarray Fortran programming models

EDUCATION

University of Minnesota, Twin Cities *Aug,2022*
Ph.D. in Computer Science

University of Houston, Main Campus *Aug,2013 - Dec,2015*
M.S. in Computer Science - Specialization in Parallel & Distributed Systems

Anna University, India *Sep,2007 - May,2011*
Bachelors in Engineering - Electrical & Electronics Engineering

TECHNICAL STRENGTHS

Programming Languages	C/C++, Fortran, Python
Parallel Programming Models	OpenSHMEM, MPI, Coarray Fortran, OpenMP
Network Libraries	DMAPP, Verbs, Libfabric
System Architectures	Aarch64, x86_64, GPU
Architectures	Cray Supercomputers, & Clusters, Intel MIC

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 Eng. College, Anna University, India, 2011.

PROJECTS

Current Projects

1. **Cray OpenSHMEMX**
   - Cray OpenSHMEMX, a new OpenSHMEM library implementation that supersedes the existing production ready Cray SHMEM library on future exascale Cray Shasta architectures
   - Design and develop Cray OpenSHMEMX from scratch with support for different transport layers including DMAPP, XPMEM, and Libfabric
2. **Cray MPICH**
   - Introduce advanced GPU-awareness using GPU Async features
   - Create an optimized message matching layer for the MPI implementation

REFEREED CONFERENCE AND WORKSHOP PUBLICATIONS

My full name is **Naveen Namashivayam Ravichandrasekaran** and I author all conference and workshop publications as **Naveen Namashivayam**.

1. T.Groves, **N.Namashivayam**, B.Cook, B.Friesen, N.Keen, D.Trebotich, N.J.Wright, B.Alverson, D.Roweth, and K.Underwood. *"Not All Applications Have Boring Communication Patterns: Profiling Message Matching with BMM"*. In Proceedings of Concurrency and Computation: Practice and Experience.
2. **N.Namashivayam**, S.Mehta, and P.C.Yew. *"Variable-sized Blocks for Locality-aware SpMV"*. In Proceedings of International Symposium on Code Generation and Optimization (CGO 2021).
3. **N.Namashivayam**, B.Long, D.Eachempati, B.Cernohous, and M.Pagel. *"A Modern Fortran Interface in OpenSHMEM."*. In Proceedings of ACM Transactions on Parallel Computing, August, 2020.
4. **N.Namashivayam**, B.Cernohous, D.Pou, and M.Pagel. *"Introducing Cray OpenSHMEMX - A Modular Multi-Communication Layer OpenSHMEM Implementation."*. In Proceedings of Fifth Workshop on OpenSHMEM and Related Technologies, August, 2018, Hanover, USA.
5. **N.Namashivayam**, B.Cernohous, K.Kandalla, D.Pou, J.Robichaux, J.Dinan, and M.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, USA.
6. K.Kandalla, P.Mendygral, N.Radcliffe, B.Cernohous, **N.Namashivayam**, K.McMahon, C.Sadlo and M.Pagel *"Current State of the Cray MPT Software Stacks on the Cray XC Series Supercomputers"*. In proceedings of Cray User Group Meeting, 2017, Redmond, USA.
7. **N.Namashivayam**, D.Knaak, B.Cernohous, N.Radcliffe, and M.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, USA.

8. **N.Namashivayam**, D.Eachempati, D.Khaldi and B.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.
9. **N.Namashivayam**, D.Khaldi, D.Eachempati and B.Chapman. *"Extending the Strided Communication Interface in OpenSHMEM"*. In Proceedings of Second OpenSHMEM Workshop: Experiences, Implementations and Tools, August, 2015, Annapolis, USA.
10. D.Knaak, and **N.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, USA.
11. **N.Namashivayam**, S.Ghosh, D.Khaldi, D.Eachempati, and B.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).

THESIS

- N.Namashivayam. *"OpenSHMEM as an Effective Communication Layer for PGAS Models"*. Master's Thesis, University of Houston, October, 2015.

KEY ACTIVITIES

Standardization efforts

1. *OpenSHMEM standardization Effort*, Participate and represent HPE in OpenSHMEM standards committee. `http://openshmem.org/`.
2. *MPI Forum*, Participate and represent HPE in the standardization forum for the Message Passing Interface (MPI).

Program Committees

1. Workshop on OpenSHMEM and Related Technologies 2016, 2017, 2018, and 2021.
2. IEEE *Transactions on Parallel and Distributed Systems* (TPDS).