SAYAN GHOSH

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EDUCATION

- **January 2015 - Present**
  PhD, Computer Science,
  Washington State University, School of EECS, Pullman, WA.
  Advisor: Dr. Assefaw Gebremedhin
  Expected graduation: 2018

- **2012 - 2014**
  PhD studies, Computer Science,
  University of Houston
  Advisor: Dr. Barbara Chapman
- **2010 - 2012**
  Master of Science (Thesis), Computer Science,
  University of Houston, Houston, TX.
  Graduated: August 2012
  Thesis title: *Energy Efficiency of Parallel Scientific Kernels*
  Advisor: Dr. Barbara Chapman
- **2002 - 2006**
  Bachelor of Technology, Information Technology
  Asansol Engineering College, Asansol, India.
  Graduated: July 2006

EXPERIENCES

Washington State University, Pullman, WA Jan 2015-May 2018
Graduate Research Assistant *Advisor: Dr. Assefaw Gebremedhin*
· *Focus*: Graph analytics, Combinatorial algorithms, One-sided programming models.

University of Houston, Houston, TX Jan 2011-Dec 2014
Graduate Research Assistant *Advisor: Dr. Barbara Chapman*
· *Focus*: Power/energy analysis and modeling of scientific kernels, Application parallelization using compiler directives, One-sided programming models.

University of Texas Health Science Center, Houston, TX Jan-Dec 2010
Graduate Research Assistant *Advisor: Dr. Stefan Birmanns*
· *Focus*: Application parallelization using compiler directives.

Thomson Reuters, Bangalore, India Jul 2008-Dec 2009
Software Engineer
· *Focus*: Database design and development.

NTT Innovation Institute, Inc., Bangalore, India Jul 2006-Jul 2008
Software Engineer
· *Focus*: Database design and development.

PUBLICATIONS /PRESENTATIONS

- [**Journal**] Sayan Ghosh, Terrence Liao, Henri Calandra and Barbara Chapman. *Performance of CPU/GPU compiler directives on ISO/TTI kernels.* Computing Journal, Springer Vienna (2013).

- **Conferences**
  - Sayan Ghosh, Mahantesh Halappanavar, Antonino Tumeo, Ananth Kalyanaraman, Hao Lu, Daniel Chavarrià-Miranda, Arif Khan, Assefaw Gebremedhin. *Distributed Louvain Algorithm for Graph Community Detection*. 32nd IEEE International Parallel and Distributed Processing Symposium (IPDPS 2018).
  - Sayan Ghosh, Assefaw Gebremedhin. *Parallelization of Bin Packing on Multicore Systems*. 23rd International Conference on High Performance Computing, Data, and Analytics (HiPC 2016).
  - Sayan Ghosh, Jeff Hammond, Antonio J. Peña, Pavan Balaji, Assefaw Gebremedhin, Barbara Chapman. *One-Sided Interface for Matrix Operations using MPI-3 RMA: A Case Study with Elemental*. 45th International Conference on Parallel Processing (ICPP 2016).
  - Naveen Namashivayam, Sayan Ghosh, Dounia Khaldi, Deepak Eachempati, 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). (*Best Paper*)
- **Workshops**
  - Priyanka Ghosh, Jeff Hammond, Sayan Ghosh, Barbara Chapman. *Performance Analysis of the NWChem TCE for Different Communication Patterns*. Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS 2013).
  - Sayan Ghosh, Terrence Liao, Henri Calandra, Barbara Chapman. *Experiences with OpenMP, PGI, HMPP and OpenACC directives on ISO/TTI kernels*. 5th International Workshop on Multi/Manycore Computing Systems (MuCoCoS 2012).
  - Jeff Hammond, Sayan Ghosh, Barbara Chapman. *Implementing OpenSHMEM using MPI-3 one-sided communication*. 1st OpenSHMEM Workshop: Experiences, Implementations and Tools (2013).
  - Sayan Ghosh, Sunita Chandrasekaran, Barbara Chapman. *Statistical modeling of power/energy of scientific kernels on a multi-GPU system*. Power Measurement and Profiling Workshop (PMP), in conjunction with International Green Computing Conference (IGCC 2013).
  - Sayan Ghosh, Sunita Chandrasekaran, Barbara Chapman. *Energy Analysis of Parallel Scientific Kernels on Multiple GPUs*. Symposium of Application Accelerators in High Performance Computing (SAAHPC 2012).
- **Posters**
  - Sayan Ghosh, Assefaw Gebremedhin. *Towards a More Asynchronous GraphBLAS*. SIAM workshop on Combinatorial Scientific Computing (CSC 2016).
  - Sayan Ghosh, Terrence Liao, Henri Calandra, Barbara Chapman. *Performance of ISO/TTI kernels on CPU/GPU using OpenMP, PGI, HMPP and OpenACC directives*. Rice Oil and Gas HPC Workshop (OGHPC 2013).
  - Sayan Ghosh, Sunita Chandrasekaran, Barbara Chapman. *Power and Energy Prediction of Multi-GPU kernels Using Non-linear Regression*. Nvidia GPU Technology Conference (GTC 2013).
  - Sayan Ghosh, Sunita Chandrasekaran, Barbara Chapman. *Statistical Power and Energy Modeling of multi-GPU kernels*. General poster, International Conference for High Performance Computing, Networking, Storage, and Analysis (SC 2012).
  - Sayan Ghosh, Barbara Chapman. *Programming Strategies for GPUs and their Power Consumption*. General poster, International Conference on Parallel Architectures and Compilation Techniques (PACT 2012).

INTERNSHIPS

Pacific Northwest National Laboratory, Richland, WA May-Aug 2018
Supervisor: Drs. Mahantesh Halappanavar and Arif Khan

Focus: Distributed-memory graph analytic algorithms, such as community detection and maximal weight matching.

Pacific Northwest National Laboratory, Richland, WA May-Aug 2017
Supervisor: Dr. Mahantesh Halappanavar

Focus: Distributed-memory network community detection.

Argonne National Laboratory, Chicago, IL May-Aug 2016
Supervisors: Drs. Pavan Balaji and Yanfei Guo

Focus: C++ bindings to MPI-3 RMA.

Argonne National Laboratory, Chicago, IL May-Aug 2014
Supervisors: Drs. Pavan Balaji and Antonio J. Peña

Focus: Asynchronous interface for updating distributed matrices in Elemental, a distributed-memory dense linear algebra library.

Argonne National Laboratory, Chicago, IL May-Aug 2013
Supervisor: Dr. Jeff Hammond

Focus: Design and prototype of a one-sided communication runtime on top of MPI-3, that led to development of an OpenSHMEM implementation over MPI-3 RMA.

Total R&T, Houston, TX May-Aug 2012
Supervisors: Drs. Terrence Liao and Henri Calandra

Focus: Evaluation of directive based programming models like OpenMP, PGI, HMPP and OpenACC on Finite Difference kernels used in Oil and Gas exploration, on GPU and multicore CPUs.

ACTIVITIES/GRANTS

- Participant, 2018 Argonne Training Program on Extreme-Scale Computing (ATPESC), July 29-August 10, St. Charles, IL
- NSF/IEEE TCPP Travel grant, 32rd International Parallel and Distributed Processing Symposium (IPDPS), Vancouver, BC, Canada
- NSF/IEEE TCPP Travel grant, 23rd International Conference on High Performance Computing, Data, and Analytics (HiPC), Hyderabad, India
- Student Volunteer, Supercomputing 2016, Salt Lake City, Utah
- Booth setup personnel, Gulf Coast Advanced Supercomputing (GCAS) booth, Supercomputing 2014, New Orleans, Louisiana
- Booth duty at Gulf Coast Advanced Supercomputing (GCAS) booth, Supercomputing 2013, Denver, Colorado
- Student Volunteer at Architectural Support for Programming Languages and Operating Systems (ASPLOS) conference, Rice University, Houston, 2013
- Co-taught a classroom session on OpenACC at Nvidia Global Technology Conference (GTC), San Jose, CA, 2013
- Booth duty at OpenMP booth and Gulf Coast Advanced Supercomputing (GCAS) booth, Supercomputing 2012, Salt Lake City, Utah
- Represented University of Houston in OpenMP booth at Multicore Developers Conference, San Jose, CA, 2011

TEACHING ASSISTANCESHIPS

- Spring 2016, Washington State University, EECS, Distributed Computing, CPTS 464/564 (*Course Instructor:* Dr. Dave Bakken)
- Fall 2015, Washington State University, EECS, Computer Communication Networks, CPTS 455 (*Course Instructor:* Dr. Carl Hauser)
- Spring 2015, Washington State University, EECS, Distributed Computing, CPTS 464/564 (*Course Instructor:* Dr. Dave Bakken)
- Fall 2010, University of Texas Health Science Center, Introductory Course on Data Structures (*Course Instructor:* Dr. Stefan Birmanns). This was an unofficial appointment, just assisted my advisor in taking the course and prepared course materials.

MEMBERSHIPS

- ACM Special Interest Group in High Performance Computing (SIGHPC)
- Institute of Electrical and Electronics Engineers (IEEE), IEEE Computer Society
- Society for Industrial and Applied Mathematics (SIAM)

INTERESTS

- Partitioned Global Address Space programming models
- Message Passing Interface
- Graph analytic applications
- Free and Open Source Softwares
- LaTeX