

SUPREETH SURESH

<https://github.com/supreethms1809/>

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OBJECTIVE

Software Engineer II with 4+ years of experience in High Performance computing, Experienced in programming accelerator architectures at a large scale, Excellent mathematical background in linear algebra and numerical methods, and 2 years of experience in Identity and Access Management

EDUCATION

Doctor of Philosophy, University of Wyoming 2018 - present
Master of Computer Science in Electrical Engineering, University of Wyoming. CGPA: 3.8 2015 - 2018
Bachelor of Engineering in Electronics and Communication Engineering,
Visvesvaraya Technological University, India. CGPA: 9.09 2008 - 2012

SKILLS

Programming Languages and Frameworks	C, C++, C++14, CUDA C FORTRAN, CUDA Fortran MPI, MultiGPU programming, OpenACC, OpenMP, Kokkos Thrill (Big data), Paraview, Paraview Catalyst, CMake Python: Xarray, numpy, cupy, numba, matplotlib, keras, tensorflow, Legate Java, JavaScript, SQL, HTML, CSS Intel OneAPI, Intel Intrinsics, Assembly Programming (FPU, MMX, SSE, AVX)
Application Systems	Git, Docker, Singularity, MATLAB, LABVIEW, Vivado (Verilog and VHDL)
Tools	Intel, Nvidia, Arm, GNU Profiling and Debugging tools
Domain	High Performance Computing, Computer Vision, Deep Learning, Big data, In Situ Visualization

EXPERIENCE

HPC Software Engineer II September 2018 – present
National Center for Atmospheric Research - CISL *Boulder, CO*

- Senior Developer Porting and optimizing the following Weather and Climate model on heterogeneous architectures
 - Model for Prediction Across Scales - Atmosphere (MPAS-A): Currently in Production. I was the CISL manager/technical lead for development, Porting, Optimization, and Integration of MPAS-A as the primary atmosphere model in IBM Weather company's production GRAF model. CISL lead for MPAS-A Advanced Scientific Discovery Experiments
 - MuRAM solar physics code: Currently in the final stages of optimizations. Responsible for optimizing GPU-Direct MPI communication at large scale, Porting and Optimizing portions of code including I/O
 - CLUBB - Currently ongoing. Cloud Physics code: Lead for Porting, Optimization, and Documentation
 - Earthworks - Development, Porting, Optimization and Integration of Global Storm-Resolving Models at a very high resolution (Technical Lead).
 - MOM6 Ocean model: Early porting and optimization of dynamical core (Technical Lead/Project manager)
- Development and utilization of novel techniques like In-Situ visualization, Exascale technologies, Containers, In-situ and parallel I/O in Weather and Climate research

Student Intern

Los Alamos National Laboratory

Summer 2018
Los Alamos, NM

- Worked on implementing Thrill (C++ and MPI based Big data framework) for various scientific Big data processing. (e.g. Molecular Dynamics, Vector In Particle Cell, HACC – cosmological data)

Graduate Student Visitor

National Center for Atmospheric Research

Oct 2017 - May 2018
Boulder, CO

- Lead Developer - Porting and Optimizing Full MPAS (Model for Prediction Across Scales) climate model to Heterogeneous architecture like IBM Power9/NVIDIA P100 GPUs

Student Intern

National Center for Atmospheric Research

Summer 2017
Boulder, CO

- Optimizing and Parallelizing NCL (NCAR Command Language) and WRF- Python. NCL is a collection of numerical, visualization, diagnostic routines used in weather and climate research

Student Intern

National Center for Atmospheric Research

Summer 2016
Boulder, CO

- Lead Developer - Porting and optimizing the dynamical core component of MPAS using OpenACC
- Provided support for SIPARCS interns to achieve their goal

Research Assistant

University of Wyoming

Aug 2015 – Aug 2018
Laramie, WY

- Senior Lead Developer - Porting and optimizing the MPAS using OpenACC
- Worked on porting short wave radiation code and MG2 kernels to Intel Xeon Phi co-processor

Teaching Assistant and Outreach worker

University of Wyoming

Aug 2015 – May 2016
Laramie, WY

- Conducting lab sessions, Grading homework, preparing equipment for Digital system design lab
- Demonstrations on Robotics for the Laramie Community – School students and parents

Assitant System Engineer

Tata Consultancy Services

2012 – 2014
Bangalore, India

- Java application development
- Developer – IBM Tivoli identity Manager and directory Integrator

PUBLICATIONS

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- **Supreeth Suresh**, Raghu Raj Kumar, Michel Duda, Richard Loft, John Dennis: [Refactoring the MPAS-A dynamical core for GPU/CPU Performance Portability Using OpenACC Directives](#) (In the works - IJHPC 2023)
 - Eric Wright, Damien Przybylski, Matthias Rempel, Cena Miller, **Supreeth Suresh**, Shiquan Su, Richard Loft, Sunita Chandrasekaran: [Refactoring the MPS/University of Chicago Radiative MHD \(MURaM\) Model for GPU/CPU Performance Portability Using OpenACC Directives](#) (PASC 2021)
 - Haniye Kashgarani, Cena Miller, **Supreeth Suresh** and Anissa Zacharias: [Exploring Performance of Geo-CAT data analysis routines on GPUs](#) (Super Computing 2022)
 - Shay Liu, **Supreeth Suresh**, Cena Miller, and Jeremy Sauer: [Analysis of FastEddy Model Data on GPUs](#) (Super Computing 2020)
 - Raghu Raj Prasanna Kumar, Michael Duda, **Supreeth Suresh**, Todd Hutchinson, John Wong [An Implementation of MPAS-Atmosphere Running on GPUs](#) (AMS 2020)

- Yang, Z.; Halem, M.; Loft, R.; **Suresh, S**; [Accelerating MPAS-A model radiation schemes on GPUs using OpenACC](#) (AGU 2019)
- **Supreeth Suresh**: [Using Thrill for scientific data analysis](#). (Super Computing 2018)
- **Supreeth Suresh**: [Vectorizing and Parallelizing NCL routines for improved performance](#) (Rocky Mountain Advanced Computing Consortium 2017)
- **Supreeth Suresh**: An OpenACC implementation of a dynamical core component of the MPAS atmospheric model (Rocky Mountain Advanced Computing Consortium 2016)

HONORS AND ACHIEVEMENTS

- Special Achievements Award for Exceptional creativity and dedication to SiParCS mentoring Summer 2020
- Special Achievements Award for extraordinary efforts in completing the IBM TWC MPAS-A GPU project
- Third best poster award - RMACC 2016 and won an all expense paid trip to SuperComputing 2016

LEADERSHIP

- Mentored a number of Graduate students and Undergraduate students throughout the years
 - [In-Situ Visualization for Model for Prediction Across Scales \(MPAS\)](#)
 - [Porting CESM-MOM6 Model on to Multiple Architectures](#)
 - [Assessing Portability of MOM6 to GPUs Using OpenACC](#)
 - [Analysis of FastEddy Model Data on GPUs](#)
 - [Evaluation of DataSpaces in Heterogeneous In-situ workflow for GPU-MURaM at Exascale](#)
 - [Porting IDL programs into Python for GPU-Accelerated In-situ Analysis](#)
 - [Performance Portability of Shallow Water Model with DPC++](#)
 - [Performance Portability of Shallow Water Model with Kokkos](#)
 - [Exploring performance of GeoCAT data analysis routines on GPUs](#)
- Successfully completed various personality development training programs like LEAD, Agile
- Successfully developed GPU training materials and delivered the training on multiple occasions