Anand Radhakrishnan

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EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY
PhD in Computational Science and Engineering
Aug 2021 - | Atlanta, GA
College of Computing
Program GPA: 4.0 / 4.0

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
M.S. in Mechanical Engineering
Aug'19 - May'21 | Champaign, IL
Conc.: Computational Science and Enginnering
Program GPA: 4.0 / 4.0

INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY
B.Tech in Mechanical Engineering
Aug'15 - May'19 | Mumbai, India
Minor : Computer Science
Program GPA: 9.18 / 10.0

LINKS

Github:// **anandrdbz**
LinkedIn:// **anandr97**

COURSEWORK

- High Performance Computing
- Heterogenous Parallel Computing
- HPC Architecture
- Machine Learning
- Computer Vision
- Algorithms
- Computational Fluid Dynamics
- Iterative and Multigrid Methods
- Spectral Methods for Fluid Flow
- Numerical Methods for PDEs

SKILLS

- CUDA • OpenACC
- MPI • OpenMP • HIP
- C++ • Fortran • Python
- Matlab • Julia • LaTeX

RESEARCH PROJECTS

GPU-accelerated multiphase CFD solver
Georgia Institute of Technology | Oct'21 - Dec'22
Guide: Prof. Spencer Bryngelson
- Offloaded a high-order accurate, portable solver via **OpenACC**
- Obtained **40X** speedup using NVIDIA GPUs on OLCF Summit
- Improved strong scaling efficiency using **CUDA Aware MPI**
- Achieved ideal weak scaling for **13824** GPUs on OLCF Summit

Meshless multigrid method for fluid flow
University of Illinois at Urbana-Champaign | May'20 - May'21
Guide: Prof. Surya Pratap Vanka
- Employed meshfree **RBF-PHS** discretization for fluid flow
- Implemented **multigrid** preconditioned GMRES for Poisson solve
- Maintained high-order accuracy using normal equations at boundaries

ACADEMIC PROJECTS

Accelerating forward pass of CNN using GPUs
University of Illinois at Urbana-Champaign
- Used **CUDA** shared memory to speedup convolution layer
- Optimized kernel launch configurations to improve warp occupancy
- Improved kernel performance using loop unrolling and thread coalescence

Additive symmetric AFACy multigrid method
Georgia Institute of Technology
- Obtained comparable converge to multiplicative multigrid at reduced cost
- Displayed superior convergence over previous methods on unstructured grids

CONFERENCE PRESENTATIONS

[1] A. Radhakrishnan, H. Le Berre, and S. H. Bryngelson. Scalable GPU accelerated simulation of multiphase compressible flow. **Supercomputing Conference, 2022**.

[2] A. Radhakrishnan, H. Le Berre, and S. H. Bryngelson. Towards exascale multiphase compressible flow simulation via scalable interface capturing-based solvers and GPU acceleration. **American Physical Soceity Division of Fluid Dynamics, 2022**

PUBLICATIONS

[1] S. Shahane, A. Radhakrishnan, and S. P. Vanka. A high-order accurate meshless method for solution of incompressible fluid flow problems. **Journal of Computational Physics**, 445:110623, 2021.

[2] A. Radhakrishnan, M. Xu, S. Shahane, and S. P. Vanka. A non-nested multilevel method for meshless solution of the poisson equation in heat transfer and fluid flow. arXiv preprint arXiv:2104.13758, 2021.

AWARDS AND ACHIEVEMENTS

- **Best paper award** at the International Symposium on Advances in Computational Heat Transfer 2021 dedicated to Prof. Spalding
- Obtained an All India Rank of **650** in JEE Avanced 2015 out of 150,000 candidates