

AKASH DHRUV

EDUCATION

The George Washington University, School of Engineering and Applied Science

PhD, GPA 3.84

In Progress

The George Washington University, School of Engineering and Applied Science

Master of Science in Mechanical and Aerospace Engineering, GPA 3.88

May 2015

National Institute of Technology, Surat, India

Bachelor of Technology in Mechanical Engineering, GPA 3.5

May 2013

RESEARCH

Simulation of Multiphase Flow with Phase Change using

FLASH

December 2015 – Present

Washington, DC

Computational Physics and Fluid Mechanics Lab, GWU.

- Worked with qualified and skilled researchers to add new Multiphase and Plasma physics modules to the AMR based [FLASH](#) code to increase its computational capability.
- Followed scientific research methods to validate and document the results obtained from test cases to assess and improve the accuracy of the code.

Hybrid Programming on Clusters

September 2015 – Present

High Performance Computing Lab, GWU.

Washington, DC

- Designed a four node Raspberry Pi Cluster and calculated its Linpack performance to understand the architecture of distributed systems in clusters.
- Developed UPC and OpenMP Poisson solvers coupled with MPI based Navier-Stokes solver to optimize on node performance in clusters.
- Currently comparing performance of Poisson solvers running on GPU and Xeon-Phi Co-Processor to optimize parallelization based on problem-size and algorithm.

The Development of Bio-Inspired Morphing Wings

September 2013 – May 2015

Smart Systems Lab, GWU.

Washington, DC

- Designed a multi-flap morphing wing inspired to mimic avian flow control methods using MATLAB and Pro Engineer.
- Developed efficient aerodynamic solvers to perform design analysis and optimization.

Aerodynamic Design of SUPRA-SAE Vehicle Phoenix

August 2012 – May 2013

National Institute of Technology

Surat, India

- Developed CFD solvers to perform aerodynamic analysis of Formula SAE vehicle.
- Studied methods to optimize the solver using mathematical and computational tools.

WORK EXPERIENCE

Researcher

September 2013 – Present

The George Washington University.

Washington, DC

- Developing parallel CFD codes to solve challenging problems in Aero and Hydro dynamics.
- Studying the potential of hybrid MPI and PGAS based solvers as a contender for exascale computing.
- Assisting Professors to conduct classes in Mechanical and Aerospace Engineering Department.
 - Duties include – Conducting recitation sessions, Grading assignments, Holding office hours.

UAV Flight Systems Engineer

May 2015 – August 2015

Queen B Robotics Inc.

Berkeley, CA

- Developed flight systems to implement swarm theory algorithm to organize coordinated missions between multiple UAVs using C and Python.
- Designed flight hardware using Beaglebone Black and Xbee radios to implement the software and conducted field tests to identify its weak parts.

Mechanical Engineer Intern

May 2012 – August 2012

CEMILAC

Bangalore, India

- Assisted in mechanical system design of aircrafts manufactured by Hindustan Aeronautics Limited.
- Learned how to use CATIA and Pro Engineer to design propulsion, aerodynamic and landing-gear systems.

THESIS AND PUBLICATIONS

1. Akash Dhruv, " *Viscous-Inviscid Methods in Unsteady Aerodynamic Analysis of Bio-Inspired Morphing Wings.*", 2015, Thesis submitted to SEAS, GWU, 2015.
2. Akash Dhruv, Chris Blower, Adam Wickenheiser, " *A Three Dimensional Iterative Panel Method for Bio-Inspired Multi-Body Wings.*", SMASIS, 2014
3. Chris Blower, Akash Dhruv, Adam Wickenheiser, " *A Two-Dimensional Iterative Panel Method and Boundary Layer Model for Bio-Inspired Multi-Body Wings.*", SPIE, March 2014
4. Akash Dhruv, Chris Blower, Adam Wickenheiser, " *A Three Dimensional Iterative Panel Method with Vortex Particle wakes and Boundary Layer Model for Bio-Inspired Multi Body Wings.*", SPIE, March 2015
5. Akash Dhruv, Chris Blower, Adam Wickenheiser, " *A Viscous-Inviscid Flow Solver for Bio-Inspired Morphing Wings.*", SEAS R&D Showcase, GWU, 2015

SKILLS AND TECHNICAL INTERESTS

Programming: C, UPC, C++, Python, Fortran, MPI, OpenMP, Chapel, CUDA, MATLAB, Perl

OS: Ubuntu, Debian, Mac OSX, Windows (*Comfortable with other Linux and Unix based platforms as well*)

Software: Simulink, Pro Engineer, Catia, Solidworks, AutoCAD, Revit, Photoshop, ICEM-CFD, Fluent, Flotherm, Icepak, CFX, Comsol

Technical Interests: High Performance Computing, Computational Science, Swarm Theory, Exascale Computing, Quantum Computing, Machine Learning

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