

ANKIT SRIVASTAVA

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EDUCATION

- Georgia Institute of Technology** 2020*
Doctor of Philosophy in Computational Science & Engineering
Current GPA: 3.91/4.00
- Master of Science in Computational Science & Engineering 2017
Overall GPA: 3.90/4.00
- Indian Institute of Technology, Kanpur** 2011
Bachelor of Technology in Civil Engineering
Overall GPA: 8.0/10.0

RESEARCH & PUBLICATIONS

- Graduate Research Assistant, Georgia Institute of Technology** September 2014 - Present
Advisor: Dr. Srinivas Aluru, School of Computational Science & Engineering
- Working on solving computationally hard problems in graph analysis by utilizing high performance computing tools on novel architectures.
 - Coauthored multiple research papers which were accepted in peer-reviewed journals and conferences.
 - I Roy, **A Srivastava**, M Grimm, S Aluru. "Interval Stabbing on the Automata Processor" In Journal of Parallel & Distributed Computing (JPDC 2018).
 - I Roy, **A Srivastava**, M Nourian, M Becchi, S Aluru. "High Performance Pattern Matching using the Automata Processor" In International Parallel & Distributed Processing Symposium (IPDPS 2016).
 - I Roy, **A Srivastava**, S Aluru. "Programming Techniques for the Automata Processor" In International Conference on Parallel Processing (ICPP 2016).

PROFESSIONAL EXPERIENCE

- Computation Intern, Lawrence Livermore National Laboratory** May 2017 - August 2017
Mentors: Dr. Abhinav Bhatele & Dr. Nikhil Jain, Center for Applied Scientific Computing
- Worked on the development of a parallel discrete-event based network simulation tool called TraceR.
 - Studied the effect of multiple job-scheduling policies on the performance of different interconnection networks by enabling the existing code of TraceR, written in C++, to simulate dynamic job scheduling.
 - Demonstrated that the scheduling policy choice significantly impacts the throughput of supercomputers.
- ANSYS Fluent India Pvt. Ltd.** July 2011 - July 2014
Technology Specialist - Software Development
- Worked as part of the Parallel/High Performance Computing team of the FLUENT software and the Solver Integration team of a novel CFD solver part of the newly developed AIM software.
 - Collaborated on the development and maintenance of the parallel architecture of the AIM CFD solver.
 - Contributed to a variety of areas during the development process of the new CFD solver since the early stages of its development, developing primarily in C++ and Python.
 - **Development of parallel file I/O for multiple CFD solvers.**
 - Designed and implemented the bulk of a parallel file I/O system, using MPI & HDF5, for the persistence of mesh, settings, and other heavyweight data by the AIM CFD solver.
 - Integrated the newly developed parallel file I/O system with the flagship CFD solver called FLUENT; significant improvement in performance was noted over legacy file I/O system for FLUENT solver.
 - Exposed the newly developed file I/O system in the FLUENT software as an addon module.
 - **Import of settings written by the CFX solver into the new CFD solver.**
 - Imported CFX's I/O and expression libraries into the new solver by writing a wrapper around them in C++ and using them for reading settings from the files written by the CFX solver.

- Created a framework in Python for translating the settings read from the CFX format files, mapped solver settings, and user defined expressions into the new software.
- Assisted in the development of a spreadsheet-based tool which was used by more than 30 team members for cross-team collaboration on the development of the new software.
- Scored 4+ points, out of a maximum of 5, in all of the company's annual performance reviews.

ACADEMIC PROJECTS

Properties and Variations of the RP-model September 2017 - December 2017

Advisor: Dr. Constantine Dvovolis, School of Computer Science, Georgia Tech

- Implemented a network generation model proposed in a journal paper, called the RP-model, in Python with the aid of graph libraries like networkx and igraph and using only the details in the paper.
- Verified the implementation by performing the experiments in the paper and validating the results of the experiments with the published results in the paper.
- Determined critical properties of the RP-model and proposed a modified version of the model to the authors of the original paper, using the insights gained from the implementation.

Genome Assembly and Analysis of a novel Salmonella strain January 2017 - April 2017

Advisor: Dr. I. King Jordan, School of Biological Sciences, Georgia Tech

- Collaborated on the whole-genome assembly of a Salmonella isolate, using the Illumina reads provided by the CDC, and creating a genome browser for exploring the properties of the assembled genome.
- Worked closely with two different teams which were primarily made up of people with expertise in life sciences and provided them with support on the computational front.

Modeling of Water Quality in River Ganga July 2010 - April 2011

Advisor: Dr. Saumyen Guha, Department of Civil Engineering, IIT Kanpur

- Comparatively analyzed two numerical models for water quality modeling in river Ganga, QUAL2K and HEC-RAS, using a test problem and successfully identified QUAL2K as the more suitable model.
- Successfully validated the model by simulating representative water quality parameters in an 835 km reach of the river and comparing the monitored values with the values predicted by the model.
- Part of Ganga River Basin Management Plan for restoration of the wholesomeness of all the rivers in the Ganga basin, undertaken by Ministry of Environment & Forests, Government of India.
- **Awarded Proficiency Medal for the best B. Tech. project work in Civil Engineering, 2011.**

Modeling of Dam Break Flow May 2010 - July 2010

Advisor: Dr. Pranab K. Mohapatra, Department of Civil Engineering, IIT Kanpur

- Simulated the 1-D dam break flow problem by first deriving the momentum and continuity equations and then coding the same in C++, using McCormack numerical scheme.
- Analyzed the variation in results for wave propagation by changing grid size, Courant number, artificial viscosity, initial downstream depth of water, and Manning's roughness coefficient.

RELEVANT COURSES

Georgia Institute of Technology August 2014 - Present

High Performance Computing	Advanced Computer Architecture
Computability & Algorithms	Computational Data Analysis (Machine Learning)
Network Science	Modeling & Simulation
Genomics & Applied Bioinformatics	Algorithms for Bioinformatics & Computational Biology

Indian Institute of Technology, Kanpur July 2007 - May 2011

Fundamentals of Mathematics	Mathematical Methods
Fundamental of Computing	Programming Tools & Techniques
Computational Methods in Engineering	Fluid Mechanics and Rate Processes
Hydraulic Engineering	Water Supply & Waste Water Engineering

TEACHING EXPERIENCE

Teaching Assistant, High Performance Parallel Computing August 2017 - December 2017
Instructor: Dr. Tobin Isaac, School of Computational Science & Engineering

- Assisted with the teaching of the course which focused on teaching the students design, implementation, and analysis of high-performance code written using OpenMP, MPI, and CUDA.
- Graded the correctness of the programming assignments and projects and also held office hours for helping the students debug the performance of their implementations.

SCHOLASTIC ACHIEVEMENTS

- Awarded KN Saluja scholarship from July 2007 to April 2008 for academic excellence by the Department of Civil Engineering, Indian Institute of Technology, Kanpur.
- Secured 1316th rank among more than 250,000 examinees in IIT Joint Entrance Examination, 2007.
- Awarded Certificate of Merit by the Department of Science & Technology, State Government of Uttar Pradesh for securing highest marks in Mathematics in Grade - 12 examination, 2007.
- Secured overall 1st rank in the district in Grade - 10 examination, 2005.

TECHNICAL STRENGTHS

Computer Languages	C, C++, Python, R, Scheme
Protocols & Libraries	MPI, OpenMP, CUDA, Boost, Swig, HDF5
Tools	Microsoft Visual Studio, Intel Parallel Studio, gdb, valgrind, Git, L ^A T _E X

<https://asrivast28.github.io>