

# ANKIT SRIVASTAVA

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115 Pine St NW, Unit 101, Atlanta, GA 30313

## EDUCATION

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<b>Georgia Institute of Technology</b> Doctor of Philosophy in Computational Science & Engineering Current GPA: 3.90/4.00	2020*
<b>Georgia Institute of Technology</b> Master of Science in Computational Science & Engineering Overall GPA: 3.90/4.00	2017
<b>Indian Institute of Technology, Kanpur</b> Bachelor of Technology in Civil Engineering Overall GPA: 8.0/10.0	2011
Indian School Certificate (Grade - 12), CISCE Percentage: 90.33 %	2007
Indian Certificate of Secondary Education (Grade - 10), CISCE Percentage: 89.67 %	2005

## RESEARCH & PUBLICATIONS

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**Graduate Research Assistant, Georgia Institute of Technology**    September 2014 - Present  
*Advisor: Dr. Srinivas Aluru, School of Computational Science & Engineering*

- Working on developing faster applications and solving problems in graph analysis and pattern matching utilizing the abilities of Micron's newly developed Automata Processor.
- Coauthored three research papers which were accepted in peer-reviewed conferences and workshops.
  - Indranil Roy, **Ankit Srivastava**, Marziyeh Nourian, Michela Becchi, and Srinivas Aluru. "High Performance Pattern Matching using the Automata Processor" In International Parallel and Distributed Processing Symposium (IPDPS 2016).
  - Indranil Roy, **Ankit Srivastava**, and Srinivas Aluru. "Programming Techniques for the Automata Processor" In International Conference on Parallel Processing (ICPP 2016).
  - Indranil Roy, **Ankit Srivastava**, Matt Grimm, and Srinivas Aluru. "Parallel Interval Stabbing on the Automata Processor" In Sixth Workshop on Irregular Applications: Architecture and Algorithms (IA<sup>3</sup> 2016).

**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.
- Enabled the tool to study the effect of different scheduling policies on inter-job interference by developing the ability to simulate dynamic job scheduling with the tool.

## PROFESSIONAL EXPERIENCE

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### **ANSYS Fluent India Pvt. Ltd.**

July 2011 - July 2014

*Technology Specialist - Software Development*

- Worked as part of Parallel/High Performance Computing team of FLUENT software and Solver Integration team of a newly developed CFD software.
- Contributed to a variety of areas during the development process of the new CFD software since early stages of its development, developing primarily in C++ and Python.
- **Persistence system for parallel CFD solvers.**
  - Designed and implemented bulk of the new persistence system with parallel capabilities for file I/O of mesh, settings, and other heavyweight data by two different solvers as part of the new CFD software.
  - Implemented read and write of data for FLUENT solver using the newly implemented system. Significant improvement in performance was noted over legacy file I/O system for FLUENT solver.
  - Integrated the persistence system in FLUENT software as an add-on module.
- **Import of settings written by CFX software into the new CFD software.**
  - Integrated CFX's I/O and expression libraries into the new software by writing a wrapper around them in C++ and then used them for reading settings from files written by CFX software.
  - Created a framework in Python for translating the settings read from CFX format files, mapped solver settings and user defined expressions from CFX into the new software using the framework.
- Worked on development, improvement, and maintenance of parallel architecture of the new software.
- Developed a Google Spreadsheet tool, using Google Apps Script, which is now being used by all the team members for cross team collaboration on development of the new software.
- Scored 4+ points, out of a maximum of 5, in all three of the company's annual performance reviews.

## ACADEMIC PROJECTS

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### **Modelling of Water Quality in River Ganga**

July 2010 - April 2011

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

- 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.
- Comparatively analysed two numerical models for water quality modelling 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, Dissolved Oxygen & Carbonaceous Biological Oxygen Demand, in an 835 km reach of the river and comparing monitored values with the values predicted by the model.
- **Awarded Proficiency Medal for the best B. Tech. project work in Civil Engineering, 2011.**

### **Modelling 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.
- Analysed 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.

### **Model of "Palau de les Arts Stadium"**

January 2009 - April 2009

*Department of Materials & Metallurgical Engineering, IIT Kanpur*

- Designed and fabricated a scaled model of the stadium using various metallurgical processes.
- Awarded Merit Certificate for planning of the project and aesthetics of the fabricated model.

## RELEVANT COURSES

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### Georgia Institute of Technology

August 2014 - Present

High Performance Computing  
High Performance Computing Architecture  
Computational Science & Engineering Algorithms  
Algorithms for Bioinformatics & Computational Biology

High Performance Parallel Computing  
Computational Data Analysis  
Computability & Algorithms  
Genomics & Applied Bioinformatics

### Indian Institute of Technology, Kanpur

July 2007 - May 2011

Fundamentals of Mathematics  
Fundamental of Computing  
Computational Methods in Engineering  
Hydraulic Engineering

Mathematical Methods  
Programming Tools & Techniques  
Fluid Mechanics and Rate Processes  
Water Supply & Waste Water Engineering

## SCHOLASTIC ACHIEVEMENTS

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- 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 1316<sup>th</sup> 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 1<sup>st</sup> rank in the district in Grade - 10 examination, 2005.

## TECHNICAL STRENGTHS

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### Computer Languages

C, C++, Python, R, Scheme

### Protocols & Libraries

MPI, HDF5, Boost

### Tools

Microsoft Visual Studio, Intel Parallel Studio, gdb, valgrind, SCons, Swig, Git, SVN, LaTeX

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<https://asrivast28.github.io>