Alok Tripathy

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Education

Aug 2015 – May 2019 **Georgia Institute of Technology**, *Atlanta, GA*.
B.S. in Computer Science. GPA: 3.92
Concentrations: Theory and Systems
Sidney Goldin Scholarship for "outstanding leadership abilities"

Sept 2014 – May 2015 **Princeton University**, *Princeton, NJ*.
Visiting High School Student
Courses: Algorithms and Data Structures, Theory of Algorithms

Research Experience

Nov 2015 – present **Research Assistant**, *High Performance Computing Lab*, Georgia Institute of Technology.
- Researched streaming graph algorithms under Dr. Oded Green and Prof. David Bader.
- Designed parallel algorithms for k-core, Point-to-Point Shortest Path problem, and Betweenness Centrality problems.
- Conducted experiments on algorithms on high-performance systems using *C/C++, OpenMP, METIS, Infomap, CUDA*.

Jun 2017 – Aug 2017 **Research Intern**, *École polytechnique fédérale de Lausanne (EPFL)*, Lausanne, Switzerland.
- Worked under Prof. Willy Zwanepoel and Jasmina Malicevic in the Operating Systems Laboratory of EPFL.
- Developed a memory layout for graphs that improved cache locality and NUMA-awareness.
- Ran experiments using the new memory layout for algorithms (e.g. PageRank, BFS) with *C/C++, Cilk(Plus), OpenMP*.

Jun 2016 – Aug 2016 **Research Intern**, *Sandia National Laboratories*, Livermore, CA.
- Implemented distributed cache coherency protocol using *Go*.
- Automated function summary generation for symbolic execution using *Python, angr*.

Teaching Experience

Jan 2016 – present **Teaching Assistant**, *Data Structures and Algorithms (CS 1332)*, Georgia Institute of Technology.
- Led weekly recitations, office hours, designed, proctored, and graded exams.
- Senior TA: handled recitation guides for TAs, exams/practice exams, plagiarism detection, and delegated tasks to 27 TAs.

Industry Experience

May 2018 – Aug 2018 **Software Engineer Intern**, *Facebook*, Menlo Park, CA.
- Designed and wrote cache to speed up internal tool used for ads integrity by orders of magnitude in *C++*.
- Wrote web app to automate and accelerate workflow for engineers on the team.

Feb 2015 – Jun 2015 **Software Engineer Intern**, *Bloomberg L.P.*, Princeton, NJ.
- Worked in the design and implementation of framework for representing PDF files internally.
- Wrote machine learning software now in Bloomberg's production environment using *Java, Weka*.

Publications

2018 A. Tripathy, O. Green. **Scaling Betweenness Centrality in Dynamic Graphs**. *High Performance Extreme Computing (HPEC) 2018.*

2018 A. Tripathy, F. Hohman, D. H. Chau, O. Green. **Scalable K-Core Decomposition for Static Graphs Using a Dynamic Graph Data Structure**. To appear in *IEEE Big Data 2018.*

2018 **[Innovation Award]** O. Green, J. Fox, A. Watkins. A. Tripathy, K. Gabert, E. Kim, Xiaojing A., K. Aatish, D. Bader. **Logarithmic Radix Binning and Vectorized Triangle Counting.** *High Performance Extreme Computing (HPEC) 2018.*

2018 A. Tripathy, O. Green **Accurately and Efficiently Estimating Dynamic Point-to-Point Shortest Path**. Senior Thesis.

Skills

Languages Java, C/C++, CUDA, Python, Hack, Bash, Verilog, Go

Tools OpenMP, Cilk/Cilk Plus, OpenMPI, LaTeX, Linux, Vim, Git, METIS, Infomap, perf, IDA Pro, angr, Weka

Honors

2018 **PURA Travel Award**, *Georgia Institute of Technology*.
President's Undergraduate Research Award to travel to HPEC 2018.

2018 **Google Games 1st Place**, *Atlanta, GA*.
1st out of 27 teams in Atlanta area in algorithmic programming competition.

2015 **Computer Security Awareness Week Capture-the-Flag**, *New York University*.
13th Nationally in College Division.

2015 **Codegate Capture-the-Flag**, *Seoul, South Korea*.
17th Internationally in HS Division.