

Education

- Aug 2019 **University of California — Berkeley, Berkeley, CA.**
present Ph.D. in Computer Science
Advised by **Aydın Buluç** and **Katherine Yelick**
- Aug 2015 **Georgia Institute of Technology, Atlanta, GA.**
May 2019 B.S. in Computer Science.
Graduated with Highest Honors

Research Experience

- Aug 2019 **Research Affiliate**, *Computational Research Division*, Lawrence Berkeley National Laboratory.
present
 - Research in high-performance and scientific computing.
 - Currently focusing on scalable graph-representation learning.
 - Working under Aydın Buluç and Katherine Yelick
- Nov 2015 **Research Assistant**, *High Performance Computing Lab*, Georgia Institute of Technology.
- May 2019
 - 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.
- Jun 2017 **Research Intern**, *École polytechnique fédérale de Lausanne (EPFL)*, Lausanne, Switzerland.
- Aug 2017
 - 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.
- Jun 2016 **Research Intern**, *Sandia National Laboratories*, Livermore, CA.
- Aug 2016
 - Implemented distributed cache coherency protocol using *Go*.
 - Automated function summary generation for symbolic execution using *Python, angr*.

Publications

- 2020 A. Tripathy, K. Yelick, A. Buluç **Reducing Communication in Graph Neural Network Training**. *ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (SC) 2020, (to appear)*, arXiv preprint arXiv:2005.03300
- 2019 J. Fox, A. Tripathy, O. Green. **Improving Scheduling for Irregular Applications with Logarithmic Radix binning**. *IEEE High Performance Extreme Computing (HPEC) 2019*, Waltham, MA
- 2018 A. Tripathy, O. Green. **Scaling Betweenness Centrality in Dynamic Graphs**. *IEEE High Performance Extreme Computing (HPEC) 2018*, Waltham, MA
- 2018 A. Tripathy, F. Hohman, D. H. Chau, O. Green. **Scalable K-Core Decomposition for Static Graphs Using a Dynamic Graph Data Structure**. *IEEE International Conference on Big Data 2018*, Seattle, WA
- 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**. *IEEE High Performance Extreme Computing (HPEC) 2018*, Waltham, MA
- 2018 A. Tripathy, O. Green. **Accurately and Efficiently Estimating Dynamic Point-to-Point Shortest Path**. Senior Thesis.

Teaching Experience

- Jan 2016 **Teaching Assistant**, *Data Structures and Algorithms (CS 1332)*, Georgia Institute of Technology.
- May 2019
 - 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.

Service

- Aug 2019 **Faculty Liaison**, *CS Graduate Student Association*, University of California — Berkeley.
present
 - Coordinated and led graduate student-run interviews of CS faculty candidates.
 - Compiled results of interviews to report to current CS faculty.
- Aug 2019 **Staff Writer**, *Berkeley Science Review*, University of California — Berkeley.
present
 - Writes magazine articles on Berkeley research for the general public.
 - Articles written: "Tracking your E-Missions: From carbon output data to agile urban planning." [here](#)
- Jan 2014 **Co-Founder**, *High School CTF*, [hsctf.com](#).
- Jun 2015
 - Co-founded the first ever computer science capture-the-flag competition run by high school students and reached over 3,000 participants.

Industry Experience

- May 2019 **Software Engineer Intern**, *NVIDIA*, New York, NY.
- Aug 2019
 - Designed and wrote multi-GPU hash table for the RAPIDS cuGraph team in *CUDA/C++*.
- May 2018 **Software Engineer Intern**, *Facebook*, Menlo Park, CA.
- Aug 2018
 - 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 **Software Engineer Intern**, *Bloomberg L.P.*, Princeton, NJ.
Jun 2015 • Designed features for determining table borders in PDF files using *Java*, *Weka*.

Invited Talks

Reducing Communication in Graph Neural Network Training.

2020 **ACM/IEEE International Conference for High Performance Computing, Networking, Storage and Analysis (SC) 2020**, Virtual.

Scalable K-Core Decomposition for Static Graphs Using a Dynamic Graph Data Structure.

2019 **NVIDIA GPU Technology Conference (GTC)**, San Jose, CA.

2018 **IEEE International Conference on Big Data**, Seattle, WA.

Honors

2019 **NSF Graduate Research Fellowship**, *National Science Foundation*.

Three years of research funding. Award to 2,000 graduate students out of 12,000 applicants.

2018-2019 **PURA Travel Award**, *Georgia Institute of Technology*.

President's Undergraduate Research Award to travel to IEEE HPEC 2018, IEEE Big Data 2018, and NVIDIA GTC 2019.

2018 **Google Games 1st Place**, *Atlanta, GA*.

1st out of 27 teams in Atlanta area in algorithmic programming competition.

2015 **Computer Security Awareness Week (CSAW) Capture-the-Flag**, *New York University*.

13th Nationally in College Division for computer security competition.

Skills

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

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