SIDDHARTH GOLLAPUDI

phone: +1 408-917-0631
email: sgollapu@berkeley.edu

RESEARCH INTERESTS

Computer Science   Algorithms and Machine Learning for Big Data

EDUCATION

University of California, Berkeley   *August 2018 - May 2021, August 2025 - May 2029 (expected)*
- Ph.D. in Computer Science
- B.A. in Mathematics
- B.A. in Computer Science

RESEARCH EXPERIENCE

Microsoft Research, India   *September 2021 - July 2024*
Research Fellow, advised by Dr. Ravishankar Krishnaswamy
- One of thirty out of 10000+ applicants accepted to the Research Fellow Program
- Lead research on theoretical and practical challenges in approximate nearest neighbors search (ANNS), contributing to Microsoft Azure and Bing product releases and top conference publications.
- Work was recognized with a three year NSF CISE PhD fellowship

Stanford University
Intern, Snyder Laboratory (Stanford School of Medicine)   *June 2015 - August 2018*
- Researched predicting kinase phosphorylation sites with protein sequence data with Dr. Andrew Lipchik
- Worked on data visualization techniques for complex proteomics and genomics data with Dr. Doug Phanstiel

Intern, Prof. Ashish Goel's Group (Stanford School of Engineering)   *June 2016 - August 2016*
- Used clustering and statistical analysis of municipal election data to infer geographical and socioeconomic biases.

PUBLICATIONS

- **α-Reachable Graphs for Multivector Search**

  Authors: Siddharth Gollapudi, Ravishankar Krishnaswamy, Ben Landrum, Nikhil Rao, Kiran Shiragur, Sandeep Silwal, Harsh Wardhan. *VecDB@ICML 2025*

- **Sort Before You Prune: Improved Worst-Case Guarantees of the DiskANN Family of Graphs**

  Authors: Siddharth Gollapudi, Ravishankar Krishnaswamy, Kirankumar Shiragur, Harsh Wardhan. *ICML 2025*

- **Improved Approximations for Hard Graph Problems using Predictions**

  Authors: Anders Aamand, Justin Chen, Siddharth Gollapudi, Sandeep Silwal, Hao Wu. *ICML 2025*

- **Learning-Augmented Frequent Directions**

  Authors: Anders Aamand, Justin Y. Chen, Siddharth Gollapudi, Sandeep Silwal, Hao Wu. *ICLR 2025 (Spotlight)*

- **Improved Approximation Algorithms for the Joint Replenishment Problem with Outliers, and with Fairness Constraints**

  Authors: Varun Suriyanarayana, Varun Sivashankar, Siddharth Gollapudi, David B. Shmoys. *SODA 2024*

- **Composable Coresets for Determinant Maximization: Greedy is Almost Optimal**

  Authors: Siddharth Gollapudi, Sepideh Mahabadi, Varun Sivashankar. *NeurIPS 2023*

· **Filtered-DiskANN: Graph Algorithms for Approximate Nearest Neighbor Search with Filters**

Authors: Siddharth Gollapudi, Neel Karia, Varun Sivashankar, Ravishankar Krishnaswamy, Harsha Vardhan Simhadri, Nikit Begwani, Amit Singh, Swapnil Raz, Yiyong Lin, Yin Zhang, Neelam Mahapatro, Premkumar Srinivasan. *The Web Conf. (WWW) 2023*

WORKING MANUSCRIPTS

· **Graph-Based Algorithms for Nearest Neighbor Search with Multiple Filters**

Authors: Siddharth Gollapudi, Varun Suriyanarayana, Ravishankar Krishnaswamy, Sandeep Silwal, Jakub Tarnawski, Phil Bernstein, Sepideh Mahabadi, Harsha Vardhan Simhadri, Suryansh Gupta, Gopal Srinivasa. *Work in Progress*

SERVICE AND AWARDS

Conference Reviewing

· ESA 2025, ESA 2022, SODA 2024

Awards

· Winner, 2024 NSF CSGrad4US Graduate Research Fellowship (Three years of full PhD program funding.)

PROJECTS

Reading Projects and Surveys   *June 2019 - December 2020*

· Summer reading project on *Graph Theory* with Prof. Dimitry Vaintrob (Berkeley Math)
· Participated in Berkeley Directed Reading Program on advanced algorithms
· Presented survey on the Unique Games Conjecture as a part of a graduate seminar course
· Presented a survey on the Restricted Burnside Problem, a key result in group theory

TEACHING

FIRST Robotics Team 299   *April 2016 - May 2023*
Team Mentor

· Introduced students to programming basics, including Python and C++, engineering algorithms such as sorting and searching, and their applications in robot substructure software development.
· Worked with advanced students on a variety of topics, including systems programming, discrete optimization, and control theory

INDUSTRY EXPERIENCE

Microsoft Research, India   *September 2021 - now*
Research Fellow

· Implemented research algorithms for filters-based search in a production-level sponsored-search setting, giving a 20% increase in advertisement engagement and a 15% increase in gained revenue
· Contributed to open-source development for DiskANN, an ANNS library

Amazon   *May 2020 - August 2020*
Summer Intern, AWS Robomaker

· Rewrote the ROS2 (Robot Operating System) cross-compilation tool, enabling all Robomaker clients to remotely build ROS2 applications and encouraging future open-source contributions
· Productionized a metrics dashboard for pinpointing future improvements and maintaining reliability of the tool

SKILLS

Programming Languages	Python, C, C++, Bash, Java
Software & Tools	git, LaTeX, pandas, Tensorflow/Pytorch, Docker, AWS, Azure