

## EDUCATION

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**University of California Santa Barbara, USA**

*Sept 2019 - Current*

*PhD Candidate, Computer Science*

*Theoretical Computer Science, GPA: 4.0/4.0*

*Advisor: Prof. [Daniel Lokshantov](#)*

**PSG College of Technology, India**

*July 2014 - May 2019*

*Integrated M.Sc, Theoretical Computer Science*

*CGPA: 9.89/10.0*

## AREAS OF INTEREST

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- Broad Areas: Theoretical Computer Science and Discrete Mathematics.
- Major Areas: Algorithmic Graph Theory, Parameterized Complexity, Computational Geometry, Randomized and Approximation algorithms.

## RESEARCH EXPERIENCE

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**Tata Institute of Fundamental Research, Mumbai**

*August 2019*

*Host: Prof. [Jaikumar Radhakrishnan](#)*

- Worked on a shortest path problem called parametric shortest path that had ties with Computational Geometry, Graph Theory and Circuit Complexity.

**Internship - Institute of Mathematical Sciences, Chennai**

*December 2018 - April 2019*

*Advisor: Prof. [Saket Saurabh](#)*

- Worked on Parameterized Approximation, a concept that unifies Parameterized Complexity and Approximation.
- Read multiple papers on this topic and gave a series of talk for a course on Parameterized Approximation.
- Current work in PhD on the min-k-cut problem is based on this research.

**Internship - Institute of Mathematical Sciences, Chennai**

*May 2017 - Dec 2017*

*Advisor: Prof. [Venkatesh Raman](#)*

- Worked on a graph partition problem called the Minimum Spanning  $k$  Forest.
- Also worked on a graph edge deletion problem called König Edge Deletion.

## INDUSTRY EXPERIENCE

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**Engineering Intern - Cisco Systems, Chennai**

*May 2018 - July 2018*

- Obtained the internship as a result of a coding contest held during Women in Technology 2018 event held at Cisco.
- Worked on a feature in Cisco DNAC product that provides the ability to execute various multilingual scripts such as Python, Ruby and JS at runtime. Java and Akka framework was used for the project.

## PUBLICATIONS

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- Vaishali, S., M. S. Atulya, and Nidhi Purohit. [Efficient Algorithms for a Graph Partitioning Problem](#). In International Workshop on Frontiers in Algorithmics, pp. 29-42. Springer, Cham, 2018.
- Majumdar Diptapriyo, Rian Neogi, Venkatesh Raman, S. Vaishali. [Tractability of König Edge Deletion Problems](#). Theoretical Computer Science 796 (2019): 207-215.

## TECHNICAL SKILLS

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- **Languages:** C++, C, Java, Python, SQL
- **Tools and Technologies:** Matlab, Latex, HTML, CSS
- **Platforms:** Windows, Unix (Ubuntu)

## ADDITIONAL ACADEMIC EXPERIENCES

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### Grace Hopper Celebration India

Bangalore, (November 2018)

- o Attended technical talks and interacted with women technologists both from academia and industry. [Certificate]

### Women in Theory (WIT) 2018 Workshop

Harvard University, (June 2018)

- o Attended technical talks and tutorials by professionals in the field of Theoretical Computer Science. [Certificate]

### ACM Summer School on Graph Theory and Graph Algorithms

IIT Gandhinagar, (June - July 2017)

- o Learned topics from advanced graph theory and algorithms including some parameterized algorithms. [Certificate]

### Teaching Assistant - Algorithms Workshop

Karpagam University, (May 2017)

- o Handled worksheet discussion sessions and taught basic algorithms for students going from second to third year.

### 4th CSA Undergraduate Summer School

IISc, (July 2016)

- o Current trends in Computer Science both in academia and industry were discussed. [Certificate]

### Summer Programme in Theoretical Computer Science

IMSc, (May-July 2016)

- o Exposed to diverse topics such as Parameterized Complexity, Tree automata, and Extremal Combinatorics. [Certificate]

## TALKS AND PRESENTATIONS

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- o **Edmonds' Blossom algorithm and Edmonds-Gallai Decomposition**, TCS Summer Programme, IMSc.
- o **Efficient Algorithms for a Graph Partitioning Problem**, WIT 2018, Harvard University.
- o **Greedy Online Algorithms and Freckle Graphs**, student session at TCS Summer Programme, IMSc.

## SELECT GRADUATE COURSEWORK

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- o Randomized Algorithms
- o Computational Geometry

## OTHER PROJECTS

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- o **PACE Challenge:** Implemented a space efficient modified version of the Dreyfus Wagner algorithm - a Fixed Parameter Tractable (FPT) algorithm parameterized by the number of Steiner nodes for the undirected Steiner Tree problem - in C++ for PACE 2018 challenge. [Report]
- o **Imaze:** Developed a graphical maze generator in Java that creates mazes based on input maze features such as the number of cells in the maze and the complexity of the maze. Disjoint-set data structure and Kruskal's algorithm was used to achieve efficiency in Ackermann time. [Code]

## OTHER EXPERIENCES AND ACHIEVEMENTS

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- o Teaching Assistant for CS24 (Problem Solving with Computers - II, UCSB).
- o Received the student scholarship for Grace Hopper Celebration India 2018.
- o Ranked 11<sup>th</sup> in Track A of PACE Challenge 2018.
- o National finalist in the ACM Lady Ada programming contest 2018.
- o Obtained an internship offer at Goldman Sachs as a National finalist in WE BUILD contest in 2017.
- o Executive Editor of The Bridge, the official magazine of PSG College of Technology, during 2016-2017.