

# Siddhartha Jain

COMPUTER SCIENCE @ EPFL · ALGORITHMS · COMPLEXITY THEORY

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“Somewhere, something incredible is waiting to be known.”  
Carl Sagan

## Education

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### EPFL

École Polytechnique Fédérale de Lausanne

Lausanne, Switzerland

M.S. IN COMPUTER SCIENCE

Sep 2020 - Present

- **Courses:** Machine Learning, Spectral Graph Algorithms, Probabilistic Methods in Combinatorics

### IIIT-Delhi

Indraprastha Institute of Information Technology, Delhi

New Delhi, India

B.TECH IN COMPUTER SCIENCE & APPLIED MATHEMATICS

Aug 2016 - Aug 2020

- Cumulative GPA 9.1/10, Major GPA 9.3/10
- Founded the Math club (Évariste)
- Represented my batch in the Student Senate, represented entire student body in the Disciplinary Action Committee

## Skills

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**Presentation** LaTeX, Illustrator

**Programming** Python, Mathematica, Julia, C++, Java

**Languages** English, Hindi, French

## Experience

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### ITCS @ SUFE

RESEARCH INTERN

Shanghai, China

May 2019 - Jul 2019

- Hosted by [Bundit Laekhanukit](#).
- Proved a theorem about the inapproximability of a **graph compression** problem. The paper can be found on [ArXiv](#).

### IIIT-Delhi

TEACHING ASSISTANT

New Delhi, India

Aug 2018 - Nov 2018

- Course: Discrete Structures.

## Projects

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### Clustering

Clustering

PAPER: INCLUDING OUTLIER PERSPECTIVE LEADS TO BETTER CLUSTERING

Mar 2020 - Aug 2020

- Co-authors: Shay Ben-Elazar, [Vincent Cohen-Addad](#), [Karthik CS](#)
- We propose a completely new paradigm for preprocessing data in an unsupervised manner to improve the performance of clustering algorithms, inspired by **Error-Correcting Codes** and **Locality Sensitive Hashing**.
- In writing.

### Limits of SAT Solvers

Algorithms

SEMESTER PROJECT AT EPFL

Sep 2020 - Present

- Supervisor: [Mika Göös](#)
- We are studying the **Resolution proof complexity** of certain problems of interest, also using tools from **query complexity**. Since SAT solvers use the Resolution proof system to make inferences, this is exactly studying the limits of what any SAT solver can do.

### Algorithms for Big Data

Algorithms

INDEPENDENT STUDY AT IIIT-DELHI

Aug 2019 - Dec 2019

- Supervisor: [Rajiv Raman](#)
- Studied various topics related to Algorithms for Big Data and presented it to my supervisor, peers and other researchers visiting or working at IIIT-Delhi.

## Guillotine Cuts & Pattern Avoidance in Permutations

Combinatorics

BACHELOR THESIS AT IIIT-DELHI

Mar 2018 - Mar 2019

- Advisors: [Rajiv Raman](#), [Samrith Ram](#)
- Worked on a combinatorial conjecture on Guillotine Cuts for Axis Parallel Rectangles, which would imply a polytime  $O(1)$  approximation algorithm for MISR, as presented in [On Guillotine Cutting Sequences](#) [Abed, Chalermsook et al].
- We found an interesting connection to Pattern Avoidance in Permutations, and posed our own conjecture along with a few results.

## Honors & Awards

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2020 **Graduation with Honors**, IIIT-Delhi

*New Delhi, India*

2019 **Dean's List**, IIIT-Delhi

*New Delhi, India*

## Workshops & Schools

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### Mathematics of Quantum Computation

*Jerusalem, Israel*

ISRAEL INSTITUTE FOR ADVANCED STUDIES

*Dec 2019*

### Mathematics for Data Science

*Bangalore, India*

INDIAN INSTITUTE OF SCIENCE

*Jul 2019*

### Graph Theory & Graph Algorithms

*Gandhinagar, India*

INDIAN INSTITUTE OF TECHNOLOGY, GANDHINAGAR

*Jun 2017*

## Extracurricular Activity

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### Évariste (Math Club of IIIT-Delhi)

*New Delhi, India*

FOUNDER

*Aug 2017*

- 40+ active members, 8 innovative events per semester.
- Organised [Convergence](#) along with Math dept of IIIT-Delhi.

### Student Senate of IIIT-Delhi

*New Delhi, India*

REPRESENTATIVE

*Apr 2018 - Aug 2019*

- Represented CSAM Batch of 2016 in the Senate.
- Represented entire student body in the Disciplinary Action Committee.