

# Natansh Mathur

QUANTUM INFORMATION SCIENCE ENTHUSIAST

✉ nmathur@cs.iitr.ac.in | 📧 nashmathur | 🌐 natanshmathur

*“Do not go gentle into that good night. Rage, rage against the dying of the light.”*

## Summary

A curious computer scientist in making trying to find answers and solutions for problems in quantum information science. Familiar with quantum computing, quantum communications and cryptography, quantum machine Learning and optimisation, and fundamentals of computer science. Easily excited by mathematics, music, and tea.

## Education

### Indian Institute of Technology, Roorkee

Roorkee, India

B.TECH. IN COMPUTER SCIENCE AND ENGINEERING

2017 - Exp. 2021

- CGPA: 9.41/10

### LBS Senior Secondary School, Kota

Kota, India

GRADE 12 (SENIOR SECONDARY LEVEL)

2017

- Percentage: 95.2%

### Nosegay Public School, Sri Ganganagar

Sri Ganganagar, India

GRADE 10 (SECONDARY LEVEL)

2015

- CGPA: 10/10

## Experience

### LIP6, CNRS and Sorbonne Université

Paris, France

RESEARCH INTERNSHIP

May, 2019 - July, 2019

- Summer Research Internship under the guidance of Prof. Elham Kashefi.
- Part of the Quantum Internet Alliance team at CNRS
- Associated with Paris Centre for Quantum Computing
- Contributed to the development of the Quantum Protocol Zoo ([wiki.veriqcloud.fr](http://wiki.veriqcloud.fr)).

### Information Management Group, IIT Roorkee

Roorkee, India

PROJECT LEADER

January, 2018 - PRESENT

- Working with a team of around 50 tech enthusiasts to develop software solutions for the college campus community.
- Maintain the IIT Roorkee official website.

## Projects

### Quantum Protocol Zoo

Paris, France

PART OF RESEARCH INTERNSHIP AT LIP6, PARIS

December, 2018 - PRESENT

- Added various protocols to the online encyclopedia of Quantum Internet Protocols and reviewed many others.
- Analysed and identified the resource requirements for performing each of the protocols.
- Developed the 'Knowledge Graphs' - a unified, interactive and user-friendly tool for resource visualisation.
- Available online at [wiki.veriqcloud.fr/index.php?title=Graphs](http://wiki.veriqcloud.fr/index.php?title=Graphs).

### Linear Cryptanalysis of Substitution-Permutation Network

Roorkee, India

SUMMER PROJECT

May, 2018 - June, 2018

- Learning project under Prof. Sugata Gangopadhyay, Dept. of CSE, IIT Roorkee.
- Implemented a Substitution-Permutation Network based Block Cipher model.
- Implemented a linear cryptanalytic attack on the developed cryptosystem for retrieval of certain key bits.

## Honours & Achievements

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- 2017 **All India Rank - 114**, KVPY, administered by Indian Institute of Science.
- 2017 **All India Rank - 231**, JEE Main, taken by more than a million students.
- 2017 **All India Rank - 348**, JEE Advanced, administered by Indian Institutes of Technology
- 2017 **Aditya Birla Scholarship Programme**, Shortlisted for 2017-18 Awards

## Skills

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<b>Programming Languages</b>	Python, C++, JAVA, C
<b>Packages and Environments</b>	Qiskit, IBMQ Simulator, Django, Android Studio, SQL, Numpy, Tensorflow
<b>Utilities</b>	Git, Linux Shell, Vim
<b>Relevant Courses (online)</b>	Quantum Information Science, Quantum Cryptography, Quantum Machine Learning
<b>Relevant Courses (offline)</b>	Mathematics-I (Linear Algebra and Calculus), Optimisation Techniques, Discrete Structures, Design and Analysis of Algorithms, Theory of Computation

## Extracurricular Activity

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### Geek Gazette

EDITOR AND PRESIDENT SINCE 2019

- Official Tech Magazine based in IIT Roorkee.
- Manage a group of 80 'geeky' people divided into four diversely functional cells - Editorial, Design, Finance and Web.
- Written and edited articles and interviews for 4 issues of the magazine and the *website*.

*Roorkee, India*

*2017 - PRESENT*

### Dramatics Section, IIT Roorkee

DRAMATIST

- Performed Stage Play and acted as non cast member for 3 stage and street plays.

*Roorkee, India*

*2017 - 2018*

### Programming and Algorithms Group

PROGRAMMER

- Member of the Competitive Coding club based in IIT Roorkee.

*Roorkee, India*

*2017 - 2018*

## References

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### Dr. Elham Kashefi

Director of Research  
CNRS, LIP6, Sorbonne Universite  
Professor of Quantum Computing  
School of Informatics, University of Edinburgh  
Associate Director  
Networked Quantum Information Technologies  
ekashefi@gmail.com

### Dr. Sugata Gangopadhyay

Professor  
Department of Computer Science and Engineering  
Indian Institute of Technology, Roorkee  
gsugata@gmail.com