Natansh **Mathur**

QUANTUM INFORMATION SCIENCE ENTHUSIAST

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

Sum**mary**

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.

Edu**cation**

Indian Institute of Technology, Roorkee
Roorkee, India

B.TECH. IN COMPUTER SCIENCE AND ENGINEERING
2017 - Exp. 2021

- CGPA: 9.47/10

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

Exp**erience**

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.veriqloud.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.

Pro**jects**

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 Graph' - a unified, interactive and user-friendly tool for resource visualisation.
- Available online at *quantumprotocolzoo.github.io/posts/visualizations*.

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

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

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

Extracurricular Activity

Geek Gazette *Roorkee, India*

Editor and President since 2019 *2017 - PRESENT*
- 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*.

Dramatics Section, IIT Roorkee *Roorkee, India*

Dramatist *2017 - 2018*
- Performed Stage Play and acted as non cast member for 3 stage and street plays.

Programming and Algorithms Group *Roorkee, India*

Programmer *2017 - 2018*
- Member of the Competitive Coding club based in IIT Roorkee.

References

Dr. Elham Kashefi
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  CNRS, LIP6, Sorbonne Universite
Professor of Quantum Computing
  School of Informatics, University of Edinburgh
Associate Director
  Networked Quantum Information Technologies
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