



AKASH KUMAR SINGH

1/42 yojna no 3, ambedkarpuram, awas vikas, kalyanpur, Kanpur, Uttar Pradesh, India 208017

+919264972866 ✉ akashkumar@students.iisertirupati.ac.in  linkedin.com/in/akash-kumar-singh-b19074183/  github.com/aaronstone1310

Education

Indian Institute of Science Education and Research (IISER), Tirupati

BS-MS in Physics

Aug. 2018 – Aug 2023

Tirupati, Andhra Pradesh

Defence Institute of Advanced Technology, Pune

M.Tech in Quantum Computing

Aug. 2023 – Present

Pune, Maharashtra

Relevant Coursework

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| <ul style="list-style-type: none">Quantum Mechanics 1 and 2Quantum InformationQuantum ComputingOptics and Photonics | <ul style="list-style-type: none">Digital system design using FPGALinear AlgebraStatistical | <ul style="list-style-type: none">ThermodynamicsElectrodynamicsProbability and StatisticsStructures of Mathematics | <ul style="list-style-type: none">Data Science 1 and 2Operations ResearchDiscrete Mathematics |
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Experience

MS Thesis at IISER Bhopal

May 2022 - June 2023

-Supervised by Dr. Ankur Raina, Electrical Engineering and Computer Science, IISER Bhopal

- Encoder for CSS codes using Measurement Based Quantum Computing (Used ZX-Calculus)

Quantum Computing India (QCI)

May 2021 - Aug 2021

Quantum Hardware Learning Circle

- Developed a understanding of different Quantum Hardware approaches and about Qiskit Metal.

Projects

Quantum N-Queens Solver | Qiskit, Python

Feb 2021 - April 2021

- Worked on Quantum N-queen solver using Qiskit for fulfillment of Term paper requirement for Quantum Mechanics 2 course.
- Understood the concept behind the N-Queen problem and how Quantum computing can help to solve it faster with less time and resource complexity
- Implemented it on Qiskit for a 4x4 case.

Quantum Approach to Non-Linear Dynamics

Mar 2021 - April 2021

- The aim of the project was to discuss a formalism that can make use of power of Universal Quantum Computers to simulate and solve classical non linear dynamics problem. This was done as a fulfillment of term paper requirement for Non-Linear Dynamics Course.
- The method of an arbitrary classical dynamical system extension to the quantum system was developed with example of Logistic Model.

Certifications

QKRISHI X IISER Tirupati: Course on Quantum Computing

May 2022 - July 2022

iQuHack 2022 : participated in annual Hackathon organized by iQuise, MIT

January 2022

Qubit X Qubit: Introduction to Quantum Computing Course sponsored by IBM

October 2020 - May 2021

- * Developed a foundational understanding of Quantum Computing with topics including Introductory Linear Algebra, coding with Qiskit, Quantum Mechanics, Quantum Algorithms and applications.

Qworld Challenge: Global Quantum Programming Workshop 2020

Nov 2020

- * Completed Programming exercises in Qiskit using Qworld Introductory Tutorial Bronze.

Quantum winter Hackathon 2020 organized by BosonQ Psi and Quantum Computing India

Dec 2020

- * Understood concepts of Computational fluid Dynamics and advantages of Quantum Computing to solve such problems.

Qiskit Global Summer School 2020 : Certificate of Quantum Excellence

July 2020 - Aug 2020

Technical Skills

Languages: Python, Fortran, Java, HTML, Latex

Technologies/Frameworks: Qiskit, Github

Leadership / Extracurricular

QSoD-The Quantum Computing Society of DIAT,Pune

Sept 2023 – Present

Founding Member

DIAT,Pune

QUIISER-The Quantum Computing and Information Club of IISER Tirupati

Jan 2021 – June 2023

Co-Founder

IISER Tirupati

Institute Innovation Council(IIC)

Aug 2020 – January 2022

Core Member

IISER Tirupati

IIC Online Sessions: Promote Innovation, IPR, Entrepreneurship, and Start-ups

Apr 2020-May 2020

Participant

MHRD's, Innovation Cell

Innovation and Entrepreneurship in a Post-Covid World

Jun 2020-Aug 2020

Excellent Performance

RMSOEE,IIT Kharagpur