

# SAMARTH KASHYAP

samkash@iu.edu  
www.somearthling.com  
+91 9110233586

## EDUCATION

---

<b>Indiana University Bloomington</b> Doctoral Student Department of Chemistry	<i>Ongoing</i>
<b>Indian Institute of Science</b> Master of Science(Research) Department of Physics	<i>August 2022 - April 2023</i> CGPA : 8.8/10
<b>Indian Institute of Science</b> Bachelor of Science(Research) Department of Physics	<i>August 2018 - April 2022</i> CGPA : 8.2/10

## PAPERS AND CONFERENCE PRESENTATIONS

---

<b><i>Quantum Convolutional Neural Network Architecture for Multi-Class Classification</i></b> <i>International Joint Conference on Neural Networks</i>	<i>June 2023</i>
· Presented the first Quantum CNN architecture capable of high-accuracy multiclass image classification · Developed novel encoding scheme for quantum CNNs to mimic the advantages of a classical convolution	

  

<b><i>Advances in Machine Learning: Where Can Quantum Techniques Help?</i></b> <i>ArXiv preprint</i>	<i>2025</i>
· Examined the potential and pitfalls of modern QML approaches	

## RESEARCH EXPERIENCE

---

<b>Center for High Energy Physics</b> <i>Research associate with Prof. Apoorva Patel</i>	IISc, Bangalore, India <i>October 2023 - July 2025</i>
· Studying applications of VQEs to estimate hydrogen bond dissociation energies · Developing simulation tools to assist in developing quantum algorithms	
<b>Department of Electronic Systems Engineering</b> <i>Master's thesis under Prof. Shayan Srinivasa Garani</i>	IISc, Bangalore, India <i>September 2021 - July 2023</i>
· Studied the application of a quantum analogue of a convolutional neural network to classify classical data · Proposed a novel encoding scheme to minimize information loss across quantum convolutional layers · Proposed a new quantum convolutional neural network architecture with improved performance on classical data comparable to classical CNNs · Ongoing work on extending the QCNN to quantum problems to take full advantage of the architecture	
<b>Department of Electrical Communication Engineering</b> <i>Undegraduate research with Prof. Vinod Sharma</i>	IISc, Bangalore, India <i>February 2021 - August 2021</i>
· Studied applications of quantum machine learning in estimating information entropy.	

**Department of Instrumentation and Applied Physics**

IISc, Bangalore, India

*Thin films lab led by Prof. KR Gunasekhar*

May 2019-July 2019

- Employed various vapor deposition methods to make thin film electronics.
- Analysed the I-V characteristics of the obtained devices and compared them with their 3-D counterparts.
- Studied the effect of an external magnetic field on sputter deposition.

**TEACHING****Quantum Information Theory**

Teaching Assistant

*Department of Electronic Systems Engineering, IISc, Bangalore*

August 2022 - December 2022

- Assisted Prof. Shayan Srinivasa Garani in teaching the course, grading and preparing problem sets and solutions.

**SCHOLASTIC ACHIEVEMENTS****Kishore Vaigyanik Protsahan Yojana(KVPY) Fellowship**

August 2018-April 2023

*Department of Science and Technology, Government of India*

- Awarded for obtaining rank 212 in the KVPY exam in 2016.
- Funded by the Department of Science and Technology for undergraduate research in India.

**National Science Camp - Vijyoshi***Department of Science and Technology*

December 2017

- Organized by the Department of Science and Technology.
- Attended interactive lectures presented by professors from various universities worldwide, on modern research areas and techniques at the Indian Institute of Science, Bangalore.

**SKILLS****Programming skills:** C, Python (with extensive experience in writing parallelized code), Matlab, LaTex**Languages:** English, Kannada**Other activities:** Soccer, Running, Hiking**Positions of responsibility:** Head of Corporate Relations, Pravega 2020 (IISc undergraduate festival - Saw footfall of over 10,000 people)