

Alapan Chaudhuri

UNDERGRADUATE RESEARCHER, [CQST](#) & [CSTAR](#), IIITH

Webpage : banrovegrie.github.io

Github : github.com/banrovegrie

alapan.chaudhuri@research.iiit.ac.in

EDUCATION	International Institute of Information Technology, Hyderabad <i>B.Tech. (with Honours) in Computer Science and Engineering (8.81/10)</i> <i>July 2019 - Present</i> Teaching Assistant: Automata Theory (Monsoon 2021)
-----------	--

EXPERIENCE	Characterizing Absolute Classes of Quantum States <i>Centre of Quantum Science and Technology, IIITH</i> <i>Dec 2021 - Present</i> Working with Prof Indranil Chakrabarty on devising algorithmic approaches like convex optimisation to characterize absolutely separable quantum states. Furthermore, studying several other absolute classes like absolutely Bell-CHSH local states and ACVENN to find similar characterization criteria.
	Photonics for Quantum Communication <i>Centre of Quantum Science and Technology, IIITH</i> <i>Jan 2022 - Present</i> Studying fully deployable QKD systems using quantum photonic chips and working towards implementing various secure quantum communication systems using photonic integrated circuits.
	Quantum Private Information Retrieval <i>Signal Processing and Communication Research Center, IIITH</i> <i>May 2021 - Present</i> Working on QPIR capacity and protocols under different scenarios like replicated, colluding and/or coded servers with Prof Prasad Krishnan .

AWARDS	<ul style="list-style-type: none">• Ranked 9th in ICPC Asia Regionals 2020-21 (Gwalior-Pune)• Nominated for the 2022 ICPC Training Camp powered by Huawei• Winner of the Goldman Sachs challenge at the Texas A&M Datathon• Sports Programming: highest rating 1795 on Codeforces and 1967 on Codechef• Certificate of Merit (top 1%) for the 2019 Indian Olympiad Qualifier in Physics
--------	---

POSITIONS OF RESPONSIBILITY	Student Moderator at NQSTS 2021 <i>National Quantum Science and Technology Symposium</i> <i>July 2021 - Aug 2021</i>
	Club Coordinator <i>Theory Group, IIITH</i> <i>Sep 2020 - Oct 2021</i>
	Moderator <i>Programming Club, IIITH</i> <i>May 2020 - June 2021</i>

PROJECTS & OPEN SOURCE	Cirq <i>Google QuantumAI (cirq)</i> <i>Aug 2021 - Present</i> <ul style="list-style-type: none">• Working on implementing support for OpenQASM3 in Cirq (ongoing).• Implemented rotation gate and serial concatenation of Kraus Operators (with Zeeshan Ahmed).
------------------------	--

PROJECTS & OPEN SOURCE

Nostradamus: Weathering Worth

Nostradamus

Apr 2021

- Explored correlations between the stock market - its volatility and behavior - against weather conditions, environmental factors, and natural disasters.
- **Technologies Used:** Python, Yahoo Finance API

Canswer Mobile App

Caregrades Technologies Pvt. Ltd.

Feb 2021 - Apr 2021

- Created a mobile app ([published in playstore](#)) for patient engagement and remote connected care along with a similar version designed for hospitals to connect them to patients directly.
- **Technologies Used:** JavaScript, Firebase, React JS, Python.

Games and Computational Complexity

Playing-Games

Sep 2020 - Nov 2020

- Proved the video game 'CELESTE' is NP-complete (original work). Furthermore, presented a dissertation explaining computational complexity of different games.
- Pre-print for the above work can be found at [arXiv:2012.07678](#).

Christine

Christine

Oct 2020

- Discord-bot that moderates sexual harassment along with toxicity and depressive behavior using approaches such as sentiment analysis.
- Used 1.6 million tweets for constructing a working scale to measure depression from text messages. Python NLTK framework was used for the same.
- **Technologies Used:** Python, Google Cloud, JavaScript, Perspective AI.

Dotabase

Dota2-Analyzer

Sep 2020

- Analyzer for professional matches in popular game Dota 2. Implemented a fully functioning DBMS based on data scraped from OpenDota and built a suitable CLI using Python.
- **Technologies Used:** MySQL, Pymysql, Python.

Mariam: a Linux Shell

Mariam

Aug 2020 - Sep 2020

- Basic shell/terminal implemented from scratch in C using Linux system calls. Includes piping, redirection, signal handling as well as extensive error handling.
- **Technologies Used:** C, Linux, Operating Systems.

SKILLS

Primary Languages: C, C++, Python, L^AT_EX, Bash, x86, Haskell

Quantum: Cirq, Q#, Qiskit

Web: JavaScript, React, HTML/CSS, MySQL, MariaDB

ML: Tensorflow, Tensorflow Quantum

INTERESTS

Quantum Computation and Information, Programming Language Theory, Algorithms and Optimization