# Alapan Chaudhuri

Undergraduate Researcher, CSTAR & CQST, IIITH

Webpage : banrovegrie.github.io
Github : github.com/banrovegrie

alapan.chaudhuri@research.iiit.ac.in

## Education

**International Institute of Information Technology, Hyderabad**
*B.Tech. (with Honors)* in Computer Science and Engineering — *July 2019 - Present*
**CGPA**: 8.87/10

## Experience

### Quantum Private Information Retrieval
*Signal Processing and Communication Research Center, IIITH* — *May 2021 - Present*

Working on QPIR capacity and protocols under different scenarios like replicated servers or maximum distance separable coded servers with Prof Prasad Krishnan.

### Data Visualization Intern
*Trivedi Center for Political Data, Ashoka University* — *Dec 2020 - Jan 2021*

Worked on the data set of Indian Governors to produce visualizations focused on understanding trends, outliers, and patterns in the data. Furthermore, performed large scale web scraping and data cleaning in order to ensure that the data is correct and standardized.

### Student Moderator at NQSTS
*National Quantum Science and Technology Symposium* — *July 2021 - Aug 2021*

Worked as a student volunteer and moderator as a part of the organizing committee of NQSTS 2021, an intiative of IEEE Quantum, IIITH and the Quantum Ecosystems Technology Council of India in association with the Office of the PSA, Govt. of India.

## Projects & Open Source

### Games and Computational Complexity
*Supervisor: Prof. Kannan Srinathan* — *Sep 2020 - Nov 2020*

- Proved the video game 'CELESTE' is NP-complete and also how under certain changes it could have been PSPACE-Complete.
- Presented a dissertation explaining how computing different versions of Nash Equilibrium is PPAD-complete.
- Wrote an introduction to Constraint Logic, as a part on 'Formalisms for Modelling Games', based on original work by Demaine et al.

Pre-print for the above work can be found at arXiv:2012.07678.

### Cirq
*Google QuantumAI (cirq)* — *Aug 2021 - Present*

- Updated `cirq.Circuit` to `cirq.AbstractCircuit` for compatibility.
- Implemented $R(\theta, \phi)$ gate.
- Serial Concatenation of Kraus Operators.

### Christine
*Christine* — *Oct 2020*

- Discord-bot that moderates sexual harassment along with toxicity and depressive behavior majorly using sentiment analysis.
- Used 1.6 million tweets for scaling depression from 0 to 4. Python NLTK framework was used for the same.
- **Technologies Used:** Python, Google Cloud, JavaScript, Perspective AI.

**Rogue One: a Game**
*Rogue-One* *Apr 2021*

- Implemented a space-ship battle game using WebGL. Further, designed an animated trailer for the game using Blender.
- **Technologies Used:** JavaScript, WebGL, Blender.

**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.
- Designed a Care Provider version of the same to work with hospitals in order to connect them directly with the patients.
- **Technologies Used:** JavaScript, Firebase, React JS, Adalo.

**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.

## Awards

- Ranked *9th* in ACM ICPC Regionals 2020 (Gwalior-Pune)
- Sports Programming: highest rating 1795 on Codeforces and 1967 on Codechef
- *First Place Overall* – Kent Hack Enough 2020
- Top 6% (National) in Google HashCode 2020
- Certificate of Merit for the National Olympiad in Physics (2019) organized by the IAPT
- Perfect score at the regionals of the Indian Computing Olympiads (2018) organized by the IARCS

## Skills

**Primary Languages:** C, C++, Python, LaTeX, Bash, x86, Haskell
**Quantum:** Cirq, Q#, Qiskit
**Web:** JavaSrcipt, React, HTML/CSS, MySQL, MariaDB
**ML:** Tensorflow, Tensorflow Quantum
**Miscelleneous:** Google Cloud, Azure, Firebase, Linux, Git

## Positions of Responsibility

**Club Coordinator**
*Theory Group, IIITH* *Sep 2020 - Present*

**Moderator**
*Programming Club, IIITH* *May 2020 - June 2021*