

Alapan Chaudhuri

UNDERGRADUATE RESEARCHER, CSTAR, IIITH

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EDUCATION

International Institute of Information Technology, Hyderabad

B.Tech. (with Honors) in Computer Science and Engineering

July 2019 - Present

- **Research Interests:** Quantum Information, Computational Complexity, Programming Languages and Machine Learning Theory
- **CGPA: 8.93/10**

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 correct standardized data.

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 initiative of [IEEE Quantum](#), IIITH and the Quantum Ecosystems Technology Council of India in association with the [Office of the PSA](#), Govt. of India.

PROJECTS

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](https://arxiv.org/abs/2012.07678).

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.

OpenGL Mini Game

Bhag Hrishi Bhag

Mar 2021

- OpenGL based basic grid game where the player tries to escape an adversary.
- **Technologies Used:** C++, OpenGL.

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.

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.

Job Application Portal

Openings

Jan 2021

- Single page application created using MERN stack. Aims for a user friendly UI along with complete functionality.
- **Technologies Used:** MongoDB, Express, React, NodeJS, JavaScript, Material UI.

Synopsys

Synopsys

Oct 2020

- Discord-bot that summarizes conversations and records them for future use.
- It extracts data from a chain of conversation, summarizes it and allows the user to have easy access to these stored summaries (via website) for future reference.
- **Technologies Used:** Python, nltk, Firebase and Firestore, Google Cloud, React JS.

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.

Improvements on xv6

Improved xv6

Aug 2020 - Sep 2020

- Added new system calls and three new schedulers which can be selected on compile time (FCFS, PBS, MLFQ) to the original MIT xv6 kernel.
 - **Technologies Used:** C, Unix, Concurrency, Scheduling, Operating Systems.
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AWARDS

- Highest rating [1795](#) on Codeforces
- Highest rating [1967](#) on Codechef
- *First Place Overall* – Kent Hack Enough
- *Best Web Application* – Hack At Home
- Top 6% (National) in Google HashCode 2020
- Certificate of Merit for the National Olympiad in Physics (2019) organized by the Indian Association of Physics Teachers
- Perfect score at the regionals of the Indian Computing Olympiads (2018) organized by the Indian Association for Research in Computing Science

SKILLS

Primary Languages: C, C++, Python, L^AT_EX, Bash, x86, Haskell
Quantum: Cirq, Q#, Qiskit
Theorem Provers: Lean, Coq
Web: JavaScript, React, HTML/CSS, MySQL, MariaDB
ML: Tensorflow, Tensorflow Quantum
Miscellaneous: Google Cloud, Azure, Firebase, Linux, Git

POSITIONS OF RESPONSIBILITY

Club Coordinator

Theory Group, IIITH

Sep 2020 - Present

Responsible for several initiatives of the club including co-starting the club's youtube channel which features talks by research students and alumni.

Moderator

Programming Club, IIITH

May 2020 - June 2021

Co-created an online platform to promote problem solving during 2020 Pandemic. Also, organized seminars and sessions on algorithms and data structures for the student community.

Overall Coordinator

Literary Club, IIITH

June 2020 - Present

Co-heading the club and in-charge of hosting and organizing events. Along with being responsible for all club operations, organised a major collective literary event in collaboration with 8 other student bodies of IIITH.

Marketing Coordinator

Electronics and Robotics Club, IIITH

June 2020 - Dec 2020

Responsible for marketing policies on behalf of the club. Previously associated with events organisation and technical support as well.
