Param Parekh

Bachelor of Technology
Information and Communication Technology

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Education

Degree	Institute	CGPA/Percentage	Year
MS in CS	Stony Brook University, New York, USA	4/4	2025-2027
B.Tech ICT	Dhirubhai Ambani University, Gujarat, India	8.6/10	2023
HSC	Knowledge High School, Anand, Gujarat	96 %	2018
Matriculation	Sardar Patel Vinay Mandir, Vasad, Gujarat	94.16%	2016

Experience

- **Software Engineer, GE Vernova** *Aug 2023 - July 2025*
  Hyderabad, India
  - Worked on NLS (native language support) automation that focuses on streamlining the generation of multilingual builds. This involved developing PowerShell scripts that performs NLS-specific functionalities seamlessly. Our efforts significantly reduced build times and improved the process.
  - Worked on the 2025 release feature: centralized SIM (Software Improvement Modules) deployment through Configuration Hub. My contributions include system design, backend development, and documenting feature functionalities. Specifically, I implemented APIs to gather available product details from registered nodes for SIM installation, fetch custom error codes from various products for improved troubleshooting and validate digital signatures before transferring them to the target deployment location. I also presented the feature to internal employees from various departments within the company. I implemented APIs to gather information about available SIMs and validate digital signatures before transferring them to the target deployment location. Since this feature involves multiple products installed on different machines, error handling becomes necessary. To address this, I designed an API that fetches custom error codes provided by different products and stores them for use in the event of failure, ensuring better troubleshooting and user understanding.
  - Worked on the iFIX (HMI/SCADA solution under Proficy suite of products) modernization feature, where we need to develop a solution which can configure settings without starting iFIX hence enhancing user experience. Also, I and one of the intern started working on GenAI based iFIX help bot which can understand user's context based on input query.
  - Attended many leadership connect events of GE Vernova specifically MFG business and had a chance to talk and share a lunch table with VPs and technical program managers.

- **Digital Technology Intern, GE Vernova** *Jan 2023 - Jul 2023*
  Hyderabad, India
  - Worked on Proficy HMI/SCADA suite of products, which primarily operate on the windows platform so I was assigned a comprehensive training program focused on system design principles in C++. I ranked first in the training and quickly began contributing to a scrum team, specifically on the "Central registration of Proficy SCADA products to Configuration Hub" feature.
  - I implemented APIs for the feature functionalities and user stories/bugs related to the installers of the products.
  - Report : Modern, industrial-strength HMI/SCADA from GE Digital, Certificate : link

Research and Publication

- **On the Classification of Weierstrass Elliptic Curves over Z_n** *ArXiv link*
  Param Parekh, Paavan Parekh, Sourav Deb, Manish K Gupta
  Computational Data, Codes

  OEIS Series that cited above paper: A000224, A046530, A238533, A371193, A371195

  My OEIS Series: A360323, A358714

Projects

- **Quantum Cryptography : Security Reductions in Quantum World** *Sep 2025*
  Quantum Computing and Applications

– As part of my graduate coursework, we conducted literature review on the security of classical cryptographic primitives in the presence of quantum adversaries. our focus includes analyzing which pseudorandom function (PRF) constructions remain secure under quantum queries, including the classical GGM PRF, the Naor–Reingold PRF via pseudorandom synthesizers, and LWE-based PRFs. we also study why traditional commitment schemes lose their binding guarantees in the quantum setting, and we examine the modern notion of collapse-binding, which restores meaningful security for commitments against quantum attackers.

– Team size: 3

- **Implementation of Quantum algorithms on IBM Qiskit** *Nov 2025*
  Quantum Computing and Applications
  – As part of my interest in quantum computing and research prospects, I am implementing foundational quantum algorithms using Qiskit. Project include: Quantum Teleportation Protocol, Deutsch-Jozsa Algorithm, Grover's Search Algorithm, Quantum Random Number Generation, Quantum Key Distribution (QKD).

- **Detection and Tracking of accident using Sequential Estimation Techniques** *Sept. 2025*
  Data Science Fundamentals
  – Developed a system for accident detection and tracking using sequential estimation techniques to infer real-time traffic conditions from noisy user reports and GPS speed data. Implemented statistical methods such as ARMA/ARIMA for time-series modeling, and deployed SPRT, CUSUM, and Page–Hinkley tests for rapid change detection in traffic speed patterns. Designed a full pipeline that identifies likely accidents, monitors their persistence by estimating evolving speed profiles, and determines clearance once normal traffic flow is restored. The approach achieved robust performance under noisy observations and demonstrated the effectiveness of sequential decision-making for real-time incident monitoring.

- **Maximal Ratio Combining (MRC) in SIMO Wireless Communication System** *Nov 2021*
  Wireless Communications
  – In a wireless communication system, message signal faces two major effects: multipath propagation and channel fading. So at the receiver side, we have multiple signal components which in turn can cause interference. The primary objective of the MRC technique is to maximize SNR or energy efficiency towards receivers and tackle the issue of fading, for which it introduced the concept of choosing an optimal weights vector. We wrote literature review paper and simulated performance plots of the system using Matlab & Simulink software.

  – Team size: 2

- **IoT Enabled Sensor System for Agriculture Applications** *Apr 2022 - Jun 2022*
  Summer Internship under TiH-IoT CHANAKYA Group Fellowship, IIT-Bombay
  – The project aims to predict and monitor the health of plants by collecting data from sensors placed in the field. Our team has built hardware modules to gather data from the soil and surroundings and a web application to display this data in an easy-to-understand format. My major contribution involved writing code in the Arduino IDE to enable real-time transfer of sensor data to the server via the ESP01 module. This data is then stored in a MongoDB database for analysis of plant disease prediction. Also, I gave sample project presentation on real-time data transfer from sensor to server in the event of Electronics Hobby Club during this internship. Repository : link, Certificate : link

  – Team size: 5

- **Group Chat Application** *Jan 2023*
  Training program in C++, GE Vernova
  – Developed a group chat application in C++, leveraging socket programming and the thread pool concept. Upon launching the server program, clients can seamlessly join the application and engage in real-time conversations within the group. The architecture is designed to be modular and scalable, incorporating key principles of object-oriented programming. Additionally, I have implemented a feature that enables direct messaging by utilizing the '@name' convention.

Courses taken @ SBU

Data Science Fundamentals, Quantum Computing and Applications, Computer system Security

Key courses taken @ DAU

- **Computer Science**: Introduction to C, Computer Organization, Object Oriented Programming in C++, Data Structures and Algorithms, Operating Systems, Database Management Systems, Computer Networks, Software Engineering
- **Electronics and Communication**: Basic Electronics, Digital Logic Design, Introduction to Communication Systems, Signals and Systems, Digital & Analog Communications, Wireless Communications, RF and Antenna Engineering, Embedded Hardware Design
- **Mathematics**: Calculas, Discrete Mathematics, Probability Statistics and Information Theory, Groups & Linear Algebra, Modern Algebra, Optimization
- **Others**: Introduction to Cryptography, Machine Learning, Blockchain, and Cryptocurrencies, Engineered Materials, DNA Data Storage and Security

Positions of Responsibility

- **Core member**, Research Club, DAIICT *Feb 2022 - Dec 2022*
- **Core member**, Elecronics Hobby Club (EHC), DAIICT *Feb 2021 - Dec 2022*
- **Committee Member**, IEEE Student Branch, DAIICT *Feb 2021 - Feb 2022*
- **Teaching Assistant**, Course : Introduction to ICT *Oct 2021 - Apr 2022*

Achievements

- **MIT Quantum Hackathon**, Confirmed Participant, iQuHack 2026 *Jan 2026*
- **Attended Conference**, Theory and Practice of Multiparty Computation *March 2025*
- **Appreciation Awards**, "Deliver with Focus" and "Act with Humility", GE Vernova *Jul 2024*
- **Attended Seminar**, The second International Coding theory Seminar *Mar 2024*
- **Attended Conference**, International Conference on Algebraic Geometry, Coding Theory and Combinatorics *Dec 2023*
- **First rank**, Intense Immersion 1-month training program in C++, GE Vernova *Jan 2023*
- **Second Rank in State**, GHSEB class 12th examinations, Gujarat *Jun 2019*

Technical Skills

- **Programming Languages**: C, C++, Python, SQL, Matlab, HTML, CSS, Javascript, GO
- **Tools and Frameworks**: Visual Studio, Visual Studio Code, PostgreSQL, Matlab & Simulink, Arduino IDE, Install Shield, Angular
- **Operating Systems**: Windows, Linux