

Param Shrikant Chaudhari

☎ +1 (984)-291-5335

✉ psch@cs.unc.edu

👤 [padg9912](#)

🌐 [Param Chaudhari](#)

🌐 Portfolio

About me

Motivated Computer Science graduate student passionate about shaping the future of AI, healthcare, and secure computing. I thrive on building innovative machine learning solutions, architecting robust pipelines, and pushing the boundaries of technology in explainable AI, blockchain, and distributed systems. With a knack for solving complex engineering puzzles and a drive to make a real-world impact, I'm eager to bring next-generation AI applications to life in both research and industry.

Current Research Interests

Explainable AI, Open-Endedness for ASI, Ethical use of AI in Healthcare, AI/ML in Precision Medicine & Therapeutics, Chaos Theory and Post-Quantum AI Security.

Education

University of North Carolina, Chapel Hill

Masters in Computer Science

August 2024 – Present

Chapel Hill, NC, USA

P.E.S. Modern College of Engineering, Pune

Bachelors in Computer Engineering (Honors in Artificial Intelligence and Machine Learning)

GPA: 9.42/10

August 2019 – June 2023

Pune, India

Skills

Languages:

Python, C/C++, Bash/Shell, Rust, SQL, Q#, Solidity, Verilog

AI/ML & Data Science:

TensorFlow, PyTorch, Keras, Scikit-learn, XGBoost, Huggingface Transformers, NLTK, spaCy, BERT, GPT architectures, Matplotlib, Seaborn, Plotly, PowerBI, Pandas, NumPy, OpenAI Gym, Apache Spark, Hadoop, FHIR, Sagemath, Ollama, Langchain, Prompt Engineering, Ethical AI

Operating System:

Windows, Linux, MacOS, POSIX APIs, Multithreading, Concurrency, Kernel modules

Cryptography & Security:

PyCryptodome, OpenSSL, Classical Algorithms, Post-Quantum Cryptography (McEliece, NTRU, BIKE, HQC), Error Correcting Codes (LDPC, MDPC, RS-RM, Goppa), SSL/TLS, Zero Trust, Consensus Algorithms

Formal Methods:

KLEE, Z3, TLA+

Quantum Computing:

Qiskit, Quantum Development Kit (QDK)

Other Technical Tools:

Git, Github, AWS, Azure, Docker, CI/CD Pipelines, PostgreSQL, MongoDB, MySQL, ChromaDB, Truffle, Web3.js, dApps, Figma, Canva AI

Experience

Defense Research and Development Organization, DRDO

August 2023 – August 2024

Full-time, Computer Programmer and Researcher

Bengaluru, India

- Led the design and implementation of code-based post-quantum cryptographic algorithms, contributing to the development of quantum-resistant encryption systems.
- Authored confidential evaluation reports on NIST PQC candidates, directly informing the selection of future-proof cryptographic standards.
- Researched and analyzed bit-flipping algorithms, delivering critical insights that guided the department's PQC development strategy.
- Collaborated with senior scientists to integrate cutting-edge cryptographic solutions into secure national defense projects.

[Palo Alto Cybersecurity](#)

March 2022 – May 2022

Intern, Cybersecurity Foundations

- Analyzed enterprise network threats and applied Zero Trust principles to design secure network models in simulated environments.
- Gained hands-on experience with firewalls, IDS/IPS, and web filters to identify and mitigate cybersecurity risks.
- Evaluated cloud deployment models and virtualization to defend against cloud-based security threats.

Bharat Blockchain Network (BBN at IDS Inc.)

January 2022 – July 2023

Student Intern, Blockchain and web3

- Founded the Blockchain Education club, named Blockaders in my institute in association with BBN and IDS Inc.
- Started and led the set-up of my institute as a node on the BBN Blockchain.
- Conducted decentralized applications workshop and talk sessions with industry dignitaries.
- Best performing Campus Ambassador for Bharat Blockchain Network at IDS Inc.

[Amazon Web Services Cloud \(AWS Cloud\)](#)

October 2021 – December 2021

Intern, AWS Foundations

- Designed and implemented a scalable, highly available cloud environment using AWS EC2, S3, RDS, and Lambda.
- Automated infrastructure deployment and configured auto-scaling with Elastic Load Balancing to optimize performance and cost.
- Developed and executed disaster recovery strategies, architecting decoupled, serverless solutions to ensure system resilience.

Publication

[Comparing Consensus in Vehicular Ad Hoc Networks: An Analytical Review](#)

Research Paper

Journal: Journal of Emerging Technologies and Innovative Research (Impact Factor: 7.95 (Google Scholar))

Published in: Vol 10 | Issue 5 | May 2023.

(& multiple classified publications under Defence Research and Development Organization (DRDO), India)

Notable Projects

[Intelligent Clinical Trial Matching Engine](#)

Python, Hugging Face Transformers, PyTorch, Streamlit, Pandas

- Upgraded a keyword-based search tool to an intelligent, AI-powered matching engine, significantly improving trial relevance and accuracy.
- Implemented an NLP pipeline using a Hugging Face NER model and fuzzy string matching to accurately score medical entities from unstructured text.
- Developed a real-time Streamlit web application to filter and rank clinical trials from unstructured patient data.

[DVOTE-AI: Secure E-Voting DApp with On-Chain AI Verification](#)

Python, Ethereum, Node.js, React, Solidity, Truffle

- Innovated an AI-powered security layer using a Python microservice to analyze on-chain data for potential fraud, significantly increasing election integrity.
- Designed and deployed decentralized, tamper-proof voting mechanisms on the Ethereum blockchain with Solidity smart contracts, ensuring end-to-end transparency and auditability.
- Built a containerized, full-stack application with Docker, integrating a React frontend, Node.js for user management, and a Web3.js client for seamless blockchain interaction.

Temporal-Aware Automated Fact-Checking and Fake News Detection

Python, BERT, ChromaDB, Pytorch

- Built a three-stage NLP pipeline for automated fact-checking using ChromaDB retrieval, time-based reranking, and BERT classification.
- Fine-tuned a BERT model on custom datasets to classify claims as true, false, or unknown, with results visualized through training metrics.
- Developed a modular codebase enabling end-to-end experimentation with both traditional and deep learning methods for fake news detection.

Adversarial Formal Verification of the Raft Consensus Protocol

C, KLEE, TLA+, Docker

- Verified safety and liveness of the Raft consensus protocol using a combination of symbolic execution (KLEE) and formal modeling (TLA+).
- Developed automated test harnesses to explore adversarial scenarios, ensuring leader uniqueness and log consistency under faults.
- Designed a reproducible workflow integrating C implementation analysis, model checking, and result interpretation for robust distributed systems validation.

BioXAI-Extended: Explainable AI Toolkit for Biological Data Analysis

Python, TensorFlow, SHAP, LIME

- Used Node.js for server-side operations, handling image uploads, and coordinating between the frontend and backend.
- Implemented cryptographic operations for image authentication using PyCryptodome.
- Integrated existing image forensic tools or libraries to enhance the application's capabilities.
- Developed algorithms to analyze image metadata for potential discrepancies or tampering.

(& multiple classified projects under Defence Research and Development Organization (DRDO), India)

Notable Open Source Contribution

Original: Stanford Alpaca: An Instruction-following LLaMA Model

Contribution: Alpaca Guard: An Enhanced Safety & Monitoring Framework Flask, Transformers, Hugging Face ecosystem

- Multi-Layered Safety: Implemented a safety framework with prompt filtering, bias detection, and quantitative response scoring.
- Advanced Monitoring: Developed a real-time monitoring system with detailed interaction logging, anomaly detection, and automated alerts.
- Interactive Dashboard: Built a dynamic web dashboard to visualize safety metrics, track performance trends, and review flagged content.

Certifications

- Rust (Microsoft)
- Quantum Computing (IBM Skillsbuild)
- Blockchain Bootcamp (IDS)
- Bitcoin Basics: Protocol and Design Course Certificate (BSV Academy)
- Python (IIT Bombay, Spoken Tutorial)
- C++ (IIT Bombay, Spoken Tutorial)
- Java (IIT Bombay, Spoken Tutorial)
- Ethical Hacking Workshop (IIT Bombay)

Extra-Curricular Activities

Co-head for CodeFiesta, Department Technical Fest

June 2021 – May 2023

- Responsible for developing event technological flow and overseeing the event progress.
- Collaborated with the treasurer or finance committee to manage the budget allocated for promotional activities.
- Responsible for inviting big amounts of sponsorship from various tech and non-tech companies for the event.

National Service Scheme's Head of Department at Computer Department

June 2020 – May 2023

- Managed and pro-actively attended 7 days social service camp at a village.
- Participated and monitored various blood donation, river cleanliness, old age home help, and tree plantation etc. activities.

