Tejaram Chaudhari

Email: tejaschaudhari131@gmail.com Mobile: +91-9139392550
LinkedIn: linkedin.com/in/tejaramchaudhari GitHub: github.com/tejaschaudhari131

Education

- **Savitribai Phule Pune University** Pune, India
  B.E.(Hons.) E&TC Engineering with Specialization in Cyber Security; CGPA: 8.10 *July 2021 - June 2025*
  Courses: *Electronic Circuit Design, Microcontrollers, Signals and Systems, Communication Systems, Cybersecurity Fundamentals, Network Security, Cryptography, Wireless Communication, Internet of Things (IoT), Cloud Security, Ethical Hacking*

Research Interests

Network and System Security, Intrusion Detection and Prevention Systems (IDPS), Adversarial Machine Learning in Security, Post-Quantum Cryptography, and Threat Intelligence & Mitigation.

Research Experience

- **Bhabha Atomic Research Centre (BARC)** Mumbai, India
  Research Intern, Electron Beam Centre *Jan 2025 – Mar 2025*
  - **High-Precision Pulse Generation**: Designed and implemented a microcontroller-based system using Cypress PSoC 5LP to generate three synchronized pulses with adjustable parameters (frequency, width, delay), achieving a timing precision of 83.33 ns by leveraging hardware-assisted logic (UDBs).
  - **Industrial Protocol Integration**: Engineered a robust remote configuration system by implementing the Modbus RTU protocol over UART (9600 bps), ensuring compliance with industrial automation standards.
  - **HMI Development**: Developed a local Human-Machine Interface (HMI) using Nextion, allowing operators to monitor and adjust pulse parameters in real-time.
  - **Firmware Optimization**: Devised a 'union'-based approach in C to efficiently handle 32-bit float-to-register conversion, maintaining data integrity and ensuring Modbus protocol compliance.

- **Palp Technologies** Pune, Maharashtra
  Research Intern *October 2023 – November 2023*
  - **Smart Irrigation System Development**: Designed and implemented an IoT-based smart irrigation system, optimizing water usage for agricultural applications using sensor data and automation.
  - **PLC SCADA Integration**: Integrated PLC SCADA automation for real-time monitoring and control of irrigation systems, enhancing efficiency in water management.
  - **Energy Efficiency Enhancement**: Focused on improving the energy efficiency of Solar Photovoltaic (SPV) pumps, evaluating their performance with different kilowatt (kW) panel and horsepower (HP) pump ratings.
  - **Sustainability Impact Evaluation**: Assessed the impact of the system on sustainable farming practices, aiming to reduce water waste and promote energy-efficient agricultural operations.

Projects

- **Final Year Project: Digital Twin for Sensor Network Management**: Architected a **secure cyber-physical digital twin** for IoT sensor networks, focusing on data integrity and secure communication. Implemented MQTT over TLS for encrypted, real-time data ingestion from distributed sensors. Developed a physics-informed model for system simulation and anomaly detection, coupled with an LSTM-based model for predictive maintenance. .
- **Adversarial GAN for Intrusion Detection Systems (IDS)**: Developed a GAN framework to generate adversarial network traffic against a deep learning-based IDS trained on CIC-IDS2017 dataset. Evaluated IDS robustness based on evasion rate and accuracy degradation, highlighting system vulnerabilities and potential improvements. [Python, TensorFlow, CIC-IDS2017] [GitHub]
- **F450-Class Autonomous Drone**: Engineered an F450 drone from scratch using a Pixhawk flight controller for autonomous surveillance. Coordinated a university-wide Drone Racing League, managing event logistics and participation from multiple institutions.
- **Autonomous Bipedal Humanoid Robot**: Led the end-to-end development of a bipedal robot, from conceptualization and system design using CAD software to 3D printing and final assembly, demonstrating a comprehensive approach to robotics engineering.
- **Hydrobot: Autonomous Water Cleaning Robot**: Developed an AI-powered robot for autonomous collection and sorting of surface-level aquatic debris using CNNs. Conceived and prototyped within a 24-hour hackathon, later winning 1st Runner-Up at a national innovation marathon.[GitHub]
- **Student Attendance Management System**: In my first year, designed and developed a QR-code based attendance system that won a college-level competition and advanced as a finalist in the National Level Project Competition 2022.

Skills Summary

- **Languages**: Python, PHP, C++, SQL, Bash
- **Hardware & Embedded**: PSoC 5LP, Arduino, Raspberry Pi, Pixhawk, Nextion HMI, Modbus RTU, UART
- **Tools & Platforms**: Git, Ansys, CAD, MATLAB, AWS, GCP, Linux, Windows
- **Professional Skills**: Leadership, Project Management, Event Coordination, Technical Writing, Public Speaking

Leadership & Service

- **Founder and Director** Nov 2024 – Present
  thinkMINNT Foundation *Pune, India*
  - **Non-Profit Establishment**: Established a non-profit organization under Section 8 of the Companies Act, 2013, dedicated to empowering high school students by bridging the gap between traditional education systems and emerging fields like AI, cybersecurity, and data science through innovative MINNT-based initiatives.
  - **Interdisciplinary Programs**: Spearheaded interdisciplinary programs integrating Mathematics, Informatics, Natural Sciences, Technology, and Networking (MINNT) to foster curiosity, leadership, and skill development among students.
- **Co-Founder and Webmaster** July 2024 – May 2025
  Cybersecurity Club, Trinity College of Engineering and Research (TCOER) *Pune, India*
  - **Club Management**: Led the development and maintenance of the Cybersecurity Club's official website to enhance visibility and streamline communication.
  - **Event Coordination**: Organized workshops, events, and competitions focused on current cybersecurity trends, tools, and practices to engage and educate students.
  - **Student Engagement**: Promoted active participation in privacy, security, and networking initiatives, encouraging hands-on learning and peer collaboration.
- **Editor-in-Chief** Jan 2024 - Nov 2024
  Department & College Newsletters, TCOER *Pune, India*
  - : Led the publication of 11 editions of the department's technical newsletter, mentoring a team of 5 students in content curation and technical writing.
  - : Sourced, edited, and showcased scholarly articles, faculty achievements, and student projects for publication on the official college website and in monthly newsletters.
- **Cloud Co-Lead** Aug 2023 - Aug 2024
  Google Developer Students Club(DSC) *Pune, India*
  - **Cloud Computing Co-lead**: Guided 120 students through a Google-powered cloud study program, including a generative AI pathway, enhancing their technical skills and knowledge.
  - **Mentorship**: Provided comprehensive mentorship by addressing queries related to cloud computing and AI, ensuring student success and effective learning.
  - **Program Engagement**: Increased overall program engagement by 20% through strategic communication and interactive learning initiatives.
  - **Communication and Materials Development**: Streamlined communication channels and actively contributed to the development of comprehensive learning materials.

Publications and Presentations

- **Guarding Against Quantum Threats: A Survey of Post-Quantum Cryptography Standardization, Techniques, and Current Implementations**: Aditya Joshi, Pritam Bhalgat, Pratibha Chavan, **Tejaram Chaudhari**, and Sumit Patil; 14th International Conference on Applications and Techniques in Information Security, November 2024.
  Link: Springer Link
- **Hydrobot: An Autonomous Solution for Surface-Level Aquatic Debris Collection and Sorting Using Convolutional Neural Networks (CNN)**: M. K. Deshmukh, **Tejaram Chaudhari**, Aditya Joshi, Shon Gaikwad, Abhinav Shukla, and Samyak Dhole; accepted for the 5th International Conference on Frontiers in Computing and Systems, December 2024
- **A Comparative Study of Ensemble Learning Models for Accurate Solar Irradiance Forecasting**: **Tejaram Chaudhari**, Aditya Joshi, Devkumar Bharti, Pratibha Chavan, M. K. Deshmukh, and Pritam Bhalgat; accepted for the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions, November 2024
  Link: IEEE Link
- **Advancing IoT Applications Through Sensor-Based Digital Twin Architecture**: T. Chaudhari, et al.; Submitted to 6th International Conference on Engineering and Technology (ICET-2025).

Certifications

- **SAP Certified Training**: Value Added Course in IoT Cyber Security & SAP Analytics Cloud (2024-25)
- **SAP Certified Training**: Advance Course in Emerging Technologies (ML, IoT, Deep Learning, ABAP on SAP BTP) (2023-24)
- **Cisco Networking Academy**: Networking Basics Certificate
- **TryHackMe**: Cybersecurity 101 Learning Path
- **TryHackMe**: Intro to Offensive Security Room
- **In Progress**: CompTIA Security+, Certified Ethical Hacker (CEH)

Honors and Awards

- SAP Code Unnati Innovation Marathon 2.0 (Gujarat) - First Runner Up (March 2024)
- Table Tennis College Fest - Silver medalist(March 2024)
- Impact Ideathon (GDSC) - Runner Up (March 2023)
- Application Developer's Day - Winner (October 2022)
- Mini-Project Competition - Winner (March 2022)