

LAKSHIT VERMA

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TECHNICAL EXPERIENCE

Undergraduate Researcher

Dr. T.M.A. Pai Endowment Chair

September 2025 – Present

Manipal, Karnataka, India · Hybrid

- Working under Senior Professor Dr. Manohara Pai and Schneider Electric on AI-enabled security analysis and testcase generation.
- Developing a novel framework that leverages Large Language Models (LLMs) to automatically parse CVE, CWE and MITRE databases to generate comprehensive security test cases for embedded systems.

Student Software Developer, Dhvani RIS

Code for GovTech DMP

May 2025 – August 2025

Remote

- Designed and implemented a FastAPI-based backend parser from scratch enabling bulk conversion of Excel-based survey forms through XLSForm to mForm-compatible JSON, supporting forms with up to 400+ questions per upload.
- Built an Angular frontend from scratch for real-time asynchronous Excel uploads, live previews, inline error reporting, and batch operations, integrated with REST APIs and MongoDB for seamless form lifecycle management.
- Achieved batch processing speeds of 2.16 seconds for 9 forms (≈3,600 questions total), with per-question conversion latency averaging 0.15 ms and single-form save times of 240ms.
- Created comprehensive automated testing scripts and CI/CD pipelines, validating JSON output against mForm templates and implementing edge-case handling for both frontend and backend.
- Links: 🌐 [Source Code](#), [GitHub Issue](#)

Digital Forensics Head

Team Cryptonite — Major Student Project

January 2024 – Present

Manipal, Karnataka, India · On-site

- Extensively participated in 150+ Capture The Flag (CTF) competitions, namely in Forensics and Reverse Engineering.
- Team achieved #2 national ranking in 2025 and #3 national ranking in 2024 on ctftime.org, competing against 10,000+ teams worldwide in prestigious competitions like BSides Bangalore CTF, IIT BHU's Kashi CTF, and NahamCon CTF.
- Designed and developed 2 original CTF challenges for niteCTF 2024: a Minecraft protocol analysis challenge requiring packet parsing and 3D coordinate extraction and an 8-bit VM challenge with NOR gate-based XOR encryption that tested participants' skills in virtual machine analysis and logic gate reverse engineering.
- Lead 20+ Junior Members in the development and execution of the team's OASIS CTF, an intra-college entry-level cybersecurity competition that attracted 499 participants across 218 teams, including challenge creation, infrastructure setup, and real-time technical support during the 36-hour event.

ACHIEVEMENTS

- Awarded **#1 Position** and **2,00,000 INR** in the ISEA-ISAP 2026 Hackathon-CTF organized by IIT Madras. **(Team Leader)**
- Awarded **#1 Position** and **1,00,000 INR** in the Smart India Hackathon 2024, under PS 1749.
- Awarded **#1 Position** and **25,000 INR** in the GITxIITB CTF by KLS GIT, Belagavi & IIT Bombay Trust Lab.
- Awarded **#1 Position** and **15,000 INR** in the KJSSE CTF by KJ Somaiya College of Engineering, Mumbai.
- Awarded **#2 Position** and **10,000 INR** in the SoftLaunch Hackathon by the MAHE Innovation Centre. **(Team Leader)**

PROJECTS

NiteWatch

Python, PyQt, Btrfs, XFS, EnCase, DFIR, Blue Teaming, Operating Systems

- A DFIR application built for Btrfs and XFS filesystems, capable of restoring deleted files along with their complete metadata.
- Parses filesystem data structures including B+ trees, inode records and superblocks, recovering both deleted and active files.
- Provides a PyQt-based graphical interface to efficiently navigate, visualize, and interact with reconstructed file system structures.

Astraeus — 🌐 [Source Code](#)

Python, PyTorch, Three.js, XGBoost

- An ensemble ML application pipeline combined with LSTM/GRU networks for high-accuracy trajectory and collision assessment.
- Provides real-time ingestion and preprocessing of Celestrak TLE data with feature engineering on orbital elements.
- Implements end-to-end system delivering 100ms inference latency, continuous risk monitoring, and 3D viz. of orbital dynamics.

EDUCATION

Manipal Institute of Technology, Manipal, Karnataka

Bachelor of Technology — Electronics Engineering (VLSI Design & Technology)

July 2023 – August 2027

Currently in VIth Semester

SKILLS

Languages

Python, C/C++, JavaScript, TypeScript, Bash, HTML/CSS, LaTeX, SQL

Frameworks & Libraries

Angular, FastAPI, Material UI, React, Next.js, PyQt, Node.js, Express.js, Tailwind CSS

Technologies

MongoDB, REST APIs, JSON, XLSForm, Git, Docker, Make/CMake

Cybersecurity

IDA Pro, Ghidra, Wireshark, Volatility, GDB, EnCase, Sleuthkit, FTK Imager, Btrfs

Management & Soft Skills

Leadership, Technical Management, Problem Solving, Communication, Teamwork, Training