LAKSHIT VERMA

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TECHNICAL EXPERIENCE

Undergraduate Researcher *September 2025 – Present*
Dr. T.M.A. Pai Endownment Chair *Manipal, Karnataka, India · Hybrid*

- Working under Senior Professor Dr. Manohara Pai and Schneider Electric on AI-enabled security analysis and test case generation.
- Built a novel framework via LLMs to automatically parse CVE, CWE and MITRE ATT&CK databases across 335K+ records.
- Created a threat analysis engine through self-healing pipelines combining LLM inference with STRIDE keyword matching.
- Automated binary vulnerability analysis using Radare with exploit generation and sandboxed verification in controlled environments.

Student Software Developer, Dhwani RIS *May 2025 – August 2025*
Code for GovTech DMP *Remote*

- Developed a FastAPI-based backend parser to enable bulk conversion of Excel-based surveys to mForm compatible JSON files.
- Built an Angular frontend from scratch for real-time async Excel uploads, live previews, inline error reporting, and batch operations
- Integrated frontend with REST APIs and MongoDB for seamless form lifecycle management.
- Achieved batch processing speeds of 2.16 seconds for 9 forms, supporting forms with up to 400+ questions per upload
- Performed with per-question conversion latency averaging 0.15 ms and single-form save times of 240ms.
- Created comprehensive testing and CI/CD pipelines, validating JSON and implementing error handling in frontend and backend.

Digital Forensics Head *January 2024 – Present*
Team Cryptonite — Major Student Project *Manipal, Karnataka, India · On-site*

- Participated in 200+ Capture The Flag (CTF) competitions, achieving #3 national ranking in 2024 and 2025 on ctftime.org.
- Designed and developed 5+ challenges for niteCTF 2024 and 2025, focusing on real-world digital forensics scenarios.
- Trained 11 Junior Members in digital forensics techniques, tools, and methodologies, enhancing the team's overall skill set.
- Created the "DFIR Gita" repository, a comprehensive training resource for future team members in digital forensics.

ACHIEVEMENTS

- Awarded **#1 Position** and **2,00,000 INR** in the ISEA-ISAP 2026 Hackathon organized by IIT Madras.
- Awarded **#1 Position** and **1,00,000 INR** in the Smart India Hackathon 2024, held at IIT Jammu.
- 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.

PROJECTS

NiteWatch *Python, PyQT, Btrfs, DFIR, 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.

MFT Parser — Source Code *C++, Cmake*

- A high-performance, cross-platform C++ NTFS forensic parser and CLI for MFT and other core system artifacts.
- Implements full metadata extraction and deleted file recovery (resident data, non-resident cluster mapping) for forensic workflows.
- Uses a portable CMake-based build & test system with recursive artifact detection for analysis on macOS, Linux, and Windows.

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 and end-to-end system delivering 100ms inference latency, continuous risk monitoring, and 3D viz. of orbital dynamics.

tens — Source Code *Objective-C, C, AppKit, Cocoa*

- A native macOS port of a plaintext based presentation tool using Cocoa/AppKit, eliminating XQuartz and X11 dependencies.
- Implements plaintext-based slide rendering with automatic text scaling and native image support using Core Graphics.

EDUCATION

Manipal Institute of Technology, Manipal, Karnataka *July 2023 – August 2027*
Bachelor of Technology — Electrical Engineering *(Minor in Computing)* *Currently in VIth Semester*

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

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