

EXPERIENCE

Kerala State Police – Kozhikode District

Calicut, India

*Research Intern**Aug 2025 – Jan 2026*

- Collaborated with traffic police to collect and curate real-world datasets from city camera feeds, enabling model training for ANPR, violation detection, and vehicle logo detection.
- Led on-site pilots to deploy and validate Sentinel across multiple locations, iterating on edge configs, dashboards, and inference reliability under live traffic conditions.

Oracle

Hyderabad, India

*Application Developer Summer Intern**May 2025 – July 2025*

- Collaborated with enterprise teams to develop and optimize scalable software solutions.
- Engineered backend microservices and improved API response times through efficient data handling.
- Participated in agile code reviews and system design sessions to ensure high-quality production deployments.

Computer Science and Engineering Department (CSED), NITC

Calicut, India

*Team Lead, Website Redevelopment**November 2024 – January 2025*

- Directed a technical team in the complete overhaul of the departmental website using a modern technology stack.
- Migrated the frontend architecture to Next.js, significantly improving page load speeds and SEO metrics.
- Rebuilt the backend utilizing Strapi as a headless CMS to streamline content management for faculty and administration.

PROJECTS

Sentinel (ANPR & Traffic System) | *OpenCV, YOLO, FastAPI, Prometheus, PostgreSQL, Redis**2025 – 2026*

- Architected a distributed edge-to-central ANPR backend with FastAPI and PostgreSQL, managing real-time data ingest and vehicle tracking from multiple edge nodes.
- Designed a fault-tolerant inference pipeline utilizing Redis Streams, async workers, and an intelligent orchestrator for dynamic auto-scaling under fluctuating processing loads.
- Established comprehensive system observability via Prometheus telemetry (edge push and central scrape) and Grafana, supporting a secure live-monitoring dashboard with WebSocket alerts.
- Published four annotated datasets to establish open-source baselines for OCR and vehicle violation extraction heuristics.

BeyPark | *OpenCV, YOLO, ReactJs, FastAPI, Firebase**2025*

- Developed an edge-to-cloud smart parking solution using RT-DETR/YOLO and FastAPI, leveraging multiprocessing to manage off-street, on-street, and gate occupancy tracking.
- Engineered a real-time Firebase synchronization system with heartbeat monitoring and snapshot storage, facilitating remote configuration and live state broadcasting.
- Created a responsive React admin dashboard and mobile live map for multi-camera surveillance, successfully deployed at the 4th Beypore International Water Festival.

NITCBase | *C++**2025*

- Developed a lightweight relational database management system from scratch.
- Implemented core functionalities including dynamic schema definition, sophisticated query parsing, and persistent data storage.

UniVerse | *Node.js, PostgreSQL, React, Tailwind CSS**May 2024*

- Built a secure, full-stack student forum platform to facilitate campus communication and resource sharing.
- Integrated JWT-based authentication and automated email verification via Nodemailer to ensure secure user onboarding.

Automated X/Twitter Bot | *JavaScript, API Integration**2025*

- Developed and deployed a scheduling automation script that dynamically posts programming content every 2 hours.

RESEARCH

Robust Vehicle Colour and License Plate Recognition in Indian Traffic Conditions*Feb 2026*

- Kamble Aditya Dattatray et al. Presented at RAID 2.0, NIT Calicut; to appear in Springer Proceedings.

A Scalable Distributed Multi-Modal Framework for Smart-City Traffic Analysis*Under review*

- Kamble Aditya Dattatray et al. Under review.

TECHNICAL SKILLS

Languages: C, C++, Python, JavaScript, SQL**Frameworks & Tools:** React, Next.js, Node.js, Java, Bash, Git, Oracle Visual Builder**Spoken Languages:** English, Marathi, Hindi

EDUCATION

National Institute of Technology Calicut (NITC)

Calicut, India

*B.Tech in Computer Science and Engineering; CGPA: 7.99**2022 – 2026***D.K.T.E. Jr. College**

Ichalkaranji, India

*HSC (Science); 86.33%**2020 – 2022*

EXTRACURRICULARS & LEADERSHIP

System Design Workshop Instructor

NITC

Technical Speaker

January 2026 – February 2026

- Conducted comprehensive workshops for peers utilizing process flowcharts to explain complex software architectures.
- Leveraged Sentinel and BeyPark as real-world case studies to teach practical microservices and edge-computing logic.

Computer Science and Engineering Association (CSEA)

NITC

Treasurer

2025 – 2026

- Managed the organization's financial operations, overseeing budgeting and advance payments for large-scale technical events.

Ekdant 25, Ganeshotsav Celebration

NITC

Executive Member

2024

- Coordinated cross-functional logistics and event planning for a major cultural festival handling a footfall of 2000+ attendees.