Nishant Kumar Bharali

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EDUCATION

Virginia Polytechnic Institute and State University, Blacksburg, VA   August 2023 – May 2025
Master of Science in Computer Engineering

Vellore Institute of Technology, Vellore, TN, India   2018 – 2022
Bachelor of Technology in Electronics and Communication Engineering

WORK EXPERIENCE

Product Development Engineer | **Mahindra & Mahindra Limited** | Chennai, TN, India   August 2022 – July 2023
R&D Electrical & Electronics Department [Automotive Product Development]

- **Projects**: Managed CDC (Cockpit Domain Controller) software architecture for ICE & BEV Vehicles: Mahindra Scorpio N, XUV700, XUV400 EV. Conducted test bench-level and vehicle-level environmental testing on in-vehicle Infotainment (IVI) and Instrument Cluster (IC) systems utilizing MATLAB (toolboxes), multimeters and oscilloscopes.
- Reported defects based upon test plan failures using eLMS and JIRA contributing to root cause analysis of issues.
- Implemented TCP/IP, USB, LIN, Ethernet and CAN interface protocols on IVI silverbox and used diagnostics tools like vector CANalyzer, CANoe, Garuda 2.0, OBD 2.0 and Wireshark to perform unit testing on Vehicle ECUs.
- Achieved **2 Android Auto Certifications** post software testing processes - PCTS Verifier, QSuite, UX, GPS/Navigation, sensor logging leading to **USD $100K p.a. in CAPEX approvals** - $10K more than the ask, securing green light by Google.
- Tailored SRDs and SOPs with senior product leads for product manufacturing optimizing project timelines by 10%.
- Integrated OTA updates, GPS benchmarking and connectivity features with cross-functional teams like ADAS, HMI and wiring harness with best FMEA practices. Experience in WiFi and Bluetooth protocol testing for IVI.
- Demonstrated expertise in Android and QNX OS, achieving **93%** bug fixes in Android Auto's initial release.

Software Engineer Intern | **Oracle Cerner** | Bangalore, Karnataka, India   January 2022 – July 2022

- Worked on a scalable healthcare IT web application using **Java, Spring Boot, Python, React, and JavaScript**, focusing on patient-bed-nurse allocation.
- Created REST API controllers tested with POSTMAN, achieving 95% unit test coverage with JUNIT, Mockito, and Jest/enzyme.
- Conducted code reviews and merged around 20 commits/week reducing software defects by **20%** alongside optimizing RDBMS MySQL database size by 7% using scripts.
- Employed Agile scrums and machine learning to cluster suppliers using medical device data, saving the team 10 hours/week.
- **DevOps:** Utilized Jenkins for CI/CD and pipeline staging script-based automation, integration and deployment processes.

PROJECTS

Full-State Feedback Control Design using Optimal LQR Control | MATLAB R2023b, Simulink, Linear Quadratic Regulator (LQR) framework, Signal Analyzer, Vehicle Network Toolbox

- Performed research project that presents a comprehensive exploration of full-state feedback control design using optimal Linear Quadratic Regulator (LQR) techniques for achieving a smooth and stable descent during the landing phase of a drone.
- Strategic pole placement to influence the system's dynamics, ensuring precise control over the drone's descent.

Idea Repository API [Industry Project] | Spring boot, React (Redux), Postman API, JSON, Git, Jenkins, MySQL, Oracle Database

- An API service for a web application that implements CRUD functionalities through REST APIs.
- A user can document ideas over their team projects, store, edit and change priority from critical defects to stable issues.
- Established user security - authorization and authentication at the backend with Redux-based UI focus on the frontend. Rigorous testing using POSTMAN resulted in improved application user rating by 15%.
- Utilized redux-saga middleware instead of Thunk for faster web page response; improved scrolling efficiency by 10%.

SKILLS

Technical: Python, Java, MATLAB, SQL, HTML, CSS, React, Linux, Git, CAN, LIN
Frameworks and Tools: PCTS Verifier, Vehicle Network Toolbox, CANalyzer, CANoe, Wireshark, RESTful API, GitHub, Jenkins, Microservices, Android, OpenCV, POSTMAN, ROS, Gazebo, MySQL, Scikit-learn, Spring, JUNIT5, Jupyter, Simulink
Other: Agile, JIRA, Product Management, eLMS (Electronic Life Management System)