BHARANIDHARAN R N

AI, Automation & Energy Systems Engineer

bharanidharan168@icloud.com · +91 93842 90323 · crivo.in
github.com/bharani456 · linkedin.com/in/bharanidharan-rn

Education

Kongu Engineering College *2023 – 2027*
B.Tech in Artificial Intelligence & Machine Learning *CGPA: 7.44/10.0*

Professional Experience

Zeon Charging *Dec 2025 – Present*
AI & Automation Engineer – BESS, EMS & EV Charging *Tiruppur, Tamil Nadu*

- Integrating **Battery Energy Storage Systems (BESS)** with high-power DC EV chargers and the grid, working on **STS/ATS panels, Single-Line Diagrams (SLDs)**, panel layouts, and cable requirements
- Troubleshooting BESS operational issues including **off-grid operation, phase failure, and SOC protection**, tracing root causes across hardware, controller, and communication layers
- Defining **Energy Management System (EMS)** requirements for grid–BESS–charger power flow, including time- and **SOC-based priority switching**, voltage monitoring, fault alerts, and remote diagnostics
- Specifying communication between EMS, BESS, and chargers over **RS485, Modbus TCP, and MQTT**, using edge computing for local control and monitoring
- Evaluating **EMS controllers and industrial edge computers** against site requirements for local control, remote monitoring, and system integration
- Building **AI/ML-based EV charging demand forecasting** models to plan battery dispatch and charger capacity
- Engineered **LLM-powered analytics pipelines on OCPP 1.6 charger logs** for automated fault detection and operational reporting, reducing manual analysis time by 70%
- Exploring **intelligent BESS analytics and energy optimization** to reduce grid dependency and improve charger uptime through automation
- Preparing **technical requirement documents** and coordinating with BESS/EMS vendors on technical requirements, datasheets, quotations, **Factory Acceptance Tests (FAT)**, dispatch, and delivery timelines

V. Thangavel and Sons Private Limited *2024 – 2025*
Team Lead – End-to-End Automation *Tamil Nadu, India*

- Led a team of 7 engineers delivering **IoT-driven industrial automation**, integrating sensors, microcontrollers, and cloud services with real-time data visualization
- Implemented CI/CD pipelines using **Jenkins, Docker, and Kubernetes**, achieving zero-downtime deployments and 40% faster release cycles

Young Indians *2024 – 2025*
Backend Developer & DevOps Engineer *Remote*

- Designed and deployed backend systems for farishtey.in and chotacop.in, integrating OCR pipelines using **Amazon Textract** and **Google Vision API**
- Managed multi-cloud infrastructure across **AWS and GCP**, achieving **99.9% uptime** through automated monitoring and deployment workflows

Projects

QR-Based Railway Track Component Management System *SIH 2025 Pre-Finalist (Rank 6)*

- Built a Ministry of Railways platform for **230+ million components** with CNN-based QR verification (**99.9% accuracy**) and defect detection for predictive maintenance using Raspberry Pi 5 and OpenCV
- Architected a backend with **72 REST APIs, MongoDB, and Apache Kafka** designed for **10,000+ concurrent users**
- Delivered an **offline-capable mobile inspection app** with GPS tagging and failure forecasting for field maintenance teams

AI-Based Traffic Signal Optimizer *2024*

- Real-time vehicle detection and density analysis with **OpenCV and deep learning** on live camera feeds
- Adaptive signal control algorithms cut average wait times by **30%** and improved peak-hour traffic flow

Smart Home Automation System *IoT Project*

- IoT system controlling **15+ appliances** with Raspberry Pi 5 and DHT22, PIR, and LDR sensors, with occupancy- and environment-based automation rules

Technical Skills

Languages: Python, JavaScript/TypeScript, Node.js, C/C++, Java
AI/ML: TensorFlow, PyTorch, Scikit-learn, OpenCV, Computer Vision, CNNs, Time-Series Forecasting
Energy & EV Systems: BESS Integration, EMS, OCPP 1.6, DC Fast Charging, STS/ATS Panels, SLDs, SOC Management
Industrial Communication: Modbus TCP, RS485, MQTT, Edge Computing, I2C, SPI
Backend & Databases: FastAPI, Express.js, Flask, PostgreSQL, MongoDB, Redis
Cloud & DevOps: AWS (EC2, S3, Lambda, Textract), GCP, Docker, Kubernetes, Jenkins, CI/CD, Git/GitHub
IoT & Embedded: Raspberry Pi 5, ESP32/ESP8266, Sensor Integration