

# BALAMURUGAN S

Full Stack Developer (MERN) | AI & ML Enthusiast

Thanjavur, Tamil Nadu | balamurugansundarraj07@gmail.com | github.com/balamurugan7845 | linkedin.com/in/balamurugan-s-10b823347  
| balamurugan.in

## PROFESSIONAL SUMMARY

Computer Science Engineering (AI & ML) student (2024-2028) with hands-on experience in full stack web development and machine learning. Skilled in designing scalable MERN applications, RESTful APIs, JWT authentication, responsive UI development, and real-time systems. Experienced in building multi-role web applications, integrating third-party APIs, and developing AI-powered solutions using OpenCV and machine learning. Passionate about software engineering, artificial intelligence, and solving real-world problems through technology.

## TECHNICAL SKILLS

Languages: C, C++, JavaScript, TypeScript, Python

Frontend: React.js, Redux Toolkit, HTML5, CSS3, Tailwind CSS, Bootstrap, Vite

Backend & Database: Node.js, Express.js, Flask, REST APIs, JWT Authentication, MongoDB, MySQL, SQLite

Tools & Cloud: Git, GitHub, VS Code, Postman, Cloudinary, Twilio API, Google Maps API

AI/ML: OpenCV, YOLO, Scikit-learn, Pandas, NumPy, TensorFlow (Basic), PyTorch (Basic)

Other: Socket.IO, Responsive Design, CRUD Operations, MVC Architecture, Role-Based Access Control (RBAC)

## PROJECTS

**Food Management System (MERN Stack)** *React.js, Redux Toolkit, Node.js, Express.js, MongoDB, Socket.IO, JWT, Cloudinary, Twilio*

- Developed a full-stack food ordering platform supporting Admin, Restaurant, Delivery Partner, and Customer roles.
- Implemented secure JWT authentication, role-based authorization, refresh tokens, and protected routes.
- Built REST APIs for authentication, restaurants, foods, orders, cart, reviews, payments, notifications, coupons, and user management.
- Developed real-time order tracking and delivery status updates using Socket.IO; migrated global state to Redux Toolkit for improved performance.

**Real-Time Bus Tracking System (MERN + ML) — Ongoing** *React.js, Node.js, MongoDB, Socket.IO, Google Maps API, Machine Learning*

- Developing a real-time bus tracking platform with live GPS updates and Google Maps route visualization.
- Building ML-based arrival time prediction and route optimization models.
- Creating dashboards for administrators and passengers.

**AI-Based Attendance Management System — Ongoing** *Python, OpenCV, YOLO, Machine Learning*

- Developed an AI-powered facial recognition attendance system with real-time face detection and recognition using OpenCV.
- Enhancing accuracy and speed by integrating YOLO for object detection.

**Smart Agriculture System** *Python, Scikit-learn, Pandas, NumPy, Matplotlib*

- Built machine learning models for crop recommendation based on soil and environmental conditions.
- Performed data preprocessing, feature engineering, model training, and evaluation across multiple algorithms.

**Billing Management System** *Python, Flask, HTML, CSS, JavaScript, MySQL*

- Developed a web-based billing application with invoice generation and customer management.
- Implemented CRUD operations, database integration, and a responsive UI.

## EXPERIENCE

**Full Stack Developer — Self Projects**

Jan 2024 - Present

- Built multiple end-to-end MERN and Flask applications following MVC architecture.
- Designed RESTful APIs, MongoDB schemas, and responsive front-end interfaces.
- Integrated third-party services including Twilio, Cloudinary, and Google Maps API.
- Applied Git-based version control, debugging, performance optimization, and clean coding practices.

## EDUCATION

**B.Tech, Computer Science Engineering (AI & ML)**

2024 - 2028

Relevant Coursework: Data Structures & Algorithms, DBMS, Operating Systems, Computer Networks, Machine Learning

## CERTIFICATIONS

- Web Development — Rinex (2026)
- Machine Learning — Rinex (2026)
- Machine Learning Achievement Certificate — Rinex (2026)

## STRENGTHS

Problem Solving • Data Structures & Algorithms • REST API Development • Team Collaboration • Quick Learner • Analytical Thinking • Debugging • Adaptability