BALASUNDAR B

Full-Stack Web Developer & MERN / Next.js Specialist

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PROFESSIONAL SUMMARY

Results-driven Full-Stack Web Developer with 7+ years of hands-on experience architecting and shipping production web applications across Next.js, React, Node.js, and MongoDB. Proven track record building enterprise-grade multi-tenant SaaS platforms (TagBill GST Invoicing with direct Indian Government NIC portal integration), high-concurrency campus ERP ecosystems (Bishop Heber College serving 10,000+ users), digital publishing CMS (Namathu Murasu), and cross-platform desktop applications (Electron.js). Holds an M.Phil in Computer Science from Bishop Heber College, bringing strong computer science fundamentals, published research in cryptographic steganography (IJCTA, ISSN: 0974-5572), database optimization, and high software reliability.

CORE TECHNICAL COMPETENCIES

- **Frontend Development:** Next.js 16 / 15 (App Router, Server Actions), React 19, TypeScript, JavaScript (ESNext), Tailwind CSS v4, Redux Toolkit, Framer Motion, GSAP, Radix UI, TanStack Query.
- **Backend & Server:** Node.js, Express, Next.js Server Actions & API Routes, RESTful APIs, WebSockets, Dynamic MongoDB Pooling, JWT / OAuth Authentication, Nodemailer, PHP.
- **Databases & Storage:** MongoDB / Mongoose, MySQL, Compound Indexing, Aggregation Pipelines, Multi-Tenant Data Isolation, Atomic Sequence Counters.
- **AI Integrations:** OpenAI API, Gemini API, AI Chatbots & Conversational Assistants, Prompt Engineering & System Prompts.
- **Desktop & Utilities:** Electron.js cross-platform desktop apps, Baileys WhatsApp API (@whiskeysockets/baileys), Barcode & QR Camera Scanning (react-zxing, jsQR).
- **DevOps & Cloud:** Git, GitHub Actions (CI/CD), Vercel, Netlify, AWS (EC2, S3), Linux / Bash, Nginx, Performance Optimization (Lighthouse 95+).

PROFESSIONAL EXPERIENCE

Full-Stack Web Developer
Jul 2025 - Present

Bishop Heber College, Trichy

Architecting, developing, and managing the institution's ERP ecosystem from student/staff portals to online admission, feedback systems, and automated administrative dashboards, serving 10,000+ daily academic users.

- Engineered Student & Staff ERP platforms serving 10,000+ daily academic users with sub-second response times.
- Built the BHC Admission Portal (React + Node.js) processing thousands of prospective candidate applications annually.
- Architected Student Feedback Portal, Alumni Network, and role-based administrative dashboards.

Frontend Engineer
2022 - Mar 2025

RU Studios

Built immersive web applications and game studio portals using Next.js, TypeScript, and React - bridging modern web engineering with interactive digital media.

- Developed responsive Next.js applications with internationalization (i18n), OAuth, and secure auth flows.
- Architected Redux Toolkit global state management with SSR hydration and zero memory leaks.
- Implemented GSAP visual interactions and achieved 95+ Google Lighthouse performance scores.

Founder & Full-Stack Developer
2020 - 2022

Wisdom Solutions

Founded independent digital development venture providing custom web development, MERN-stack applications, and tailored software solutions to commercial clients.

- Delivered 10+ custom React & Node.js web applications for commercial and local businesses.
- Managed end-to-end project lifecycles from architectural design to deployment and client handover.
- Established reproducible development workflows, CI/CD pipelines, and coding best practices.

Process Associate
2018 - Jun 2020

HGS Bangalore

Worked in the BPM industry handling client-facing process management, workflow coordination, and operations before transitioning into full-time software engineering.

- Handled enterprise client-facing process management and SLA fulfillment.

FEATURED PRODUCTION SAAS & ENGINEERING PROJECTS

TagBill - GST-Compliant Multi-Tenant Invoicing SaaS Platform [invoice.tagfinity.in]

Next.js 16, TypeScript, MongoDB, Redux Toolkit, Tailwind CSS v4, jsPDF, ExcelJS, react-zxing

- Engineered production-grade multi-tenant invoicing SaaS for Indian MSMEs with direct NIC GST e-Invoice portal integration for automated IRN and signed QR generation.
- Designed dynamic per-tenant MongoDB connection pooling with atomic sequence counters and compound indexes { invoiceNumber: 1, userId: 1 } eliminating number collision.
- Integrated in-browser camera scanning (react-zxing), dynamic UPI payment QR generation, and server-side PDF invoice compilation via jsPDF in under 400ms.

TagFinity Digital Loyalty Cards & Stamp Platform [loyaltag.tagfinity.in]

Next.js 16, TypeScript, MongoDB, Redux Toolkit, jsQR, qr-scanner, Tailwind CSS, Framer Motion

- Built end-to-end digital loyalty stamp card platform replacing paper punch cards with zero app installation needed for customers.
- Implemented in-browser camera QR scanning (<150ms detection) and merchant staff kiosk mode protected by secure PIN validation.
- Prevented double-stamp reward fraud using atomic MongoDB transactions and cooldown timestamps per card.

Tagfinity Embroidery Office ERP & Desktop Suite [github.com/balasundarb/embroidery_office]

Electron.js, Next.js, TypeScript, MongoDB, Baileys WhatsApp API

- Engineered cross-platform desktop ERP client for textile factories with automated WhatsApp dispatch notifications using @whiskeysockets/baileys.
- Built high-performance order grid virtualization and piece-rate worker payroll calculation engines.

Namathu Murasu - Tamil Newspaper CMS & Publishing Platform [namathumurasu.tagfinity.in]

React, JavaScript, PHP REST API, MySQL Full-Text Search, Bootstrap

- Developed high-volume Tamil digital news portal handling breaking feeds, daily e-paper PDF archive, and sub-120ms full-text historical news search with native Tamil Unicode support.
- Built an editorial admin panel with WYSIWYG article drafting, status publishing flags, and strategic ad monetization slots.

TagFinity Quiz & Assessment Platform [quiz.tagfinity.in]

Next.js, React, TypeScript, Tailwind CSS, Redux Toolkit, Framer Motion

- Created real-time gamified testing platform with drift-free delta timestamp synchronization to eliminate countdown timer drift across browser tabs.
- Built celebratory animations, interactive score breakdowns, and server-side answer key validation to prevent test cheating.

RESEARCH PUBLICATIONS & CONFERENCE PAPERS

"Secret Communication using Steg - Analysis"

International Journal of Control Theory and Applications (IJCTA) (Vol. 9, Issue 27, 2016, pp. 399-405 | ISSN: 0974-5572)

Presented at International Conference on Computing, Communication and Information Science (ICCCIS), Bishop Heber College, Trichy.

CERTIFICATIONS & FACULTY DEVELOPMENT

- **Managing Online Classes & Co-creating MOOCS** (Ramanujan College, University of Delhi)
- **Online Examination Tools & Evaluation Systems** (Bishop Heber College, Trichy)
- **Online Content Creation Tools** (Bishop Heber College, Trichy)
- **Technical Certification in Software Engineering** (Mahendra College o
- **Ethical Hacking & Cyber Security Workshop** (SYSTECH Academy, Tr
- **NCC Grade 'A' Certificate & Leadership Camps** (National Cadet Corps

EDUCATION & ACADEMIC CREDENTIALS

M.Phil in Computer Science 2015 - 2016

First Class (73.2%) | Bishop Heber College, Tiruchirappalli, Tamil Nadu

Specialized research in advanced cryptographic steganography and algorithmic analysis.

M.Sc in Computer Science 2013 - 2015

First Class (75.3%) | Bishop Heber College, Tiruchirappalli, Tamil Nadu

Specialized in Database Architecture, Distributed Systems, and Object-Oriented Engineering.

B.Sc in Computer Science 2010 - 2013

First Class (75.3%) | Bishop Heber College, Tiruchirappalli, Tamil Nadu

Core computer science foundations in Data Structures, C, C++, Java, and DBMS.