

JAYASURYA T APPU
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Professional Summary
Backend Systems Engineer with 4 years of experience designing, building, and optimizing scalable backend platforms for production web and mobile applications. Experienced in developing high-performance REST APIs, asynchronous processing pipelines, backend performance optimizations, authentication systems, and distributed workflows using Node.js and modern backend technologies. Passionate about systems programming, distributed systems, and AI infrastructure, with personal projects exploring RAG architectures, microservices, and compiler toolchains.
Experience
Carclenx (Pexa) - Software Engineer (July 2025 - Present) - Designed and delivered scalable backend services and high-performance REST APIs powering production web and mobile applications, successfully supporting production traffic of ~1,000 requests per second. - Engineered asynchronous processing pipelines using Redis Streams and background worker services, significantly improving application responsiveness by decoupling long-running operations from the request lifecycle. - Architected and implemented a Worker & Staff Analytics module, optimizing task allocation logic and contributing to an 80% reduction in service cancellations. - Designed and implemented secure authentication, authorization, session lifecycle management, and Role-Based Access Control (RBAC), strengthening application security across multiple user roles and administrative workflows. - Architected Finite State Machine (FSM)-driven backend workflows to manage conversational state transitions and complex business processes, improving maintainability and reducing workflow complexity. - Designed a distributed payroll management system that reduced manual HR effort by approximately 70–80% through workflow automation. - Optimized MongoDB schemas, indexing strategies, aggregation pipelines, cursor-based pagination, and geospatial queries, reducing API response times by 30–50% for data-intensive endpoints. - Designed resilient integrations with messaging platforms and payment gateways by implementing validation, retry mechanisms, and fault-tolerant error handling to ensure reliable communication between distributed services. - Developed Angular-based user interfaces and integrated frontend components with backend APIs to deliver seamless end-to-end application functionality. - Collaborated with engineering teams to define API contracts, review backend architecture, and deliver production-ready solutions following Clean Architecture principles and backend engineering best practices. Cordova Educational Solutions — Software Developer (Oct 2024 – June 2025) - Developed and maintained scalable backend services and REST APIs supporting production Learning Management System (LMS) and business applications. Modernized legacy backend modules by decomposing tightly coupled code into reusable components and optimizing core algorithms using efficient data structures, improving code maintainability while increasing processing performance by approximately 20–40%. - Optimized database queries and backend business logic to improve application responsiveness and ensure consistent data handling across production systems. - Worked across the stack by developing React.js features, enhancing existing user interfaces, and integrating frontend components with backend services to deliver complete application functionality. - Collaborated with developers and product stakeholders to translate business requirements into reliable, production-ready software solutions. - Investigated production issues through debugging, root cause analysis, and backend optimization, improving application reliability and overall system stability.

Quest Innovative Solution - Junior Software Engineer (Dec 2022 - Sept 2024) - Developed and maintained 30+ REST APIs for multiple client applications using Node.js and Express.js, delivering scalable backend services for booking systems and other business solutions. - Built reusable backend modules and business logic that accelerated feature development while following clean coding and software engineering best practices. Modernized legacy backend modules by refactoring tightly coupled code into reusable components, improving maintainability, readability, and long-term code quality. - Designed and optimized relational database queries and backend business logic, improving application performance, data consistency, and overall system reliability. - Integrated third-party APIs and external services to streamline business workflows and extend application capabilities across multiple client projects. - Developed responsive React.js user interfaces and integrated frontend components with backend APIs to deliver seamless end-to-end application functionality. - Diagnosed and resolved backend and frontend production issues through debugging, code optimization, and root cause analysis, improving software stability and reducing recurring defects. - Collaborated with senior developers throughout the software development lifecycle, contributing to feature implementation, testing, deployment, and continuous enhancement of production applications.
Carclenx (Pexa) - Full Stack Developer (Jan 2022 - June 2022) - Developed responsive Angular-based administrative dashboards and integrated frontend components with backend APIs to deliver intuitive and efficient user experiences. - Built and maintained RESTful APIs using Node.js and Express.js to support internal business applications and operational workflows. - Integrated third-party APIs and external services to extend platform capabilities and enable seamless data exchange across business systems. - Collaborated across frontend and backend development to implement reliable, maintainable, and production-ready application features. - Investigated and resolved application issues through debugging, testing, and code enhancements, improving software stability, maintainability, and overall application quality.

Technical Skills

Languages: JavaScript (ES6+), TypeScript, SQL, C Backend Technologies: Node.js, Express.js, REST APIs, Authentication & Authorization, RBAC, Session Management, Redis Streams, Asynchronous Processing, Worker Services, Finite State Machine (FSM) Frontend: Angular, React.js, HTML5, CSS3 Databases: MongoDB, MySQL, Redis System Design & Architecture: RESTful API Design, Clean Architecture, Modular Application Design, Database Schema Design, API Integration, Backend Performance Optimization, Distributed System Fundamentals Tools & Platforms: Git, GitHub, Postman, Linux, VS Code, Nginx Cloud & Deployment: AWS(Basics), Vercel AI & Personal Engineering: Retrieval-Augmented Generation (RAG), Vector Embeddings, ChromaDB, Hugging Face Transformers, LLM Integrations
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Projects

Enterprise Knowledge Platform (Personal Project) Tech Stack: Python, FastAPI, ChromaDB, Sentence Transformers, Hugging Face, LLMs Engineered a Retrieval-Augmented Generation (RAG) platform enabling semantic search and AI-powered question answering over enterprise knowledge bases.

- Built document ingestion pipelines supporting chunking, embedding generation, vector indexing, and similarity-based retrieval for efficient knowledge discovery.
- Designed REST APIs for document management, semantic search, and AI-assisted responses using FastAPI.
- Implemented vector search using ChromaDB and Sentence Transformers to retrieve contextually relevant information for LLM-based answer generation.
- Designed the system using modular architecture to enable future scalability, model replacement, and support for multiple document sources.
- Project Link : [Enterprise Knowledge Platform](#)

Distributed Commerce Platform (Personal Project)

Tech Stack: Node.js, Express.js, MongoDB, Redis, Docker, gRPC

- Designed a distributed e-commerce platform using a microservices architecture with independently deployable services for users and products.
- Implemented REST APIs and inter-service communication using gRPC to enable efficient service-to-service interactions.
- Integrated Redis for caching and asynchronous communication while leveraging MongoDB for independent service data management.
- Configured Nginx as an API gateway to route client requests across backend services.
- Containerized services using Docker Compose to simplify local deployment and simulate production-like environments.
- Project Link : [Distributed Commerce Platform](#)

Forge – Build Automation Tool

Tech Stack: C, GCC, Windows API

- Developed a command-line build automation tool in C that scans project directories and automatically generates GCC compilation commands.
- Implemented recursive directory traversal using the Windows API to discover source and header files across nested project structures.
- Designed modular components for argument parsing, project analysis, and build command generation following separation of concerns.
- Built the project to deepen understanding of compiler toolchains, linking, object files, and systems programming fundamentals.
- Project Link : [Forge](#)

Education

Bachelor of Technology (BTech) – Computer Science and Engineering : 2017 – 2021

Socials

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