

# Sudharshan Madhavan

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## Education

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### California State University, Fullerton

M.S. in Software Engineering; GPA: 4.0

Fullerton, CA

Aug 2024 – Dec 2025

### ASTRA University

B.Tech in Computer Science & Engineering

Thanjavur, India

Jul 2016 – May 2020

## Technical Skills

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**Programming Languages:** Python, TypeScript, JavaScript, Node.js, PHP, Java

**Frontend:** HTML5, CSS3, Bootstrap 5, Angular, React.js, AngularJS

**Backend:** FastAPI, Laravel, RESTful APIs, Kafka, YANG, OAuth 2.0, JWT, Microservices Architecture, Design Patterns

**Cloud & DevOps:** AWS (S3, Lambda, SQS, CloudFormation, SNS, SES, EC2, IAM), Terraform, Docker, Github, Git

**Databases, Tools & Observability:** SQL, MySQL, DynamoDB, Redis, JIRA, Amazon CloudWatch

## Professional Experience

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### Calix

San Jose, CA

Software Engineer Intern

May 2025 – Aug 2025

- Developed a CLI tool with **intelligent autocomplete** for network configuration using **libyang (C++)** to dynamically parse YANG 1.1 schemas, enabling context-aware tab-completion and parameter validation for developer workflows.
- Built an **automated schema diff tool** integrated with Bamboo CI/CD and Bitbucket to validate release versions, performing **attribute-level comparison** and path-based grouping for clearer schema change tracking.

### My Digital Accounts

Chennai, India

Software Engineer

Sept 2020 – June 2024

- Designed end-to-end event-driven microservices architecture using **React frontend** and **AWS serverless backend** (Lambda, SQS, SNS, DynamoDB), processing **30K+ messages/day**, achieving **80% improved delivery success rate**.
- Architected **OAuth 2.0 authentication system** with Angular frontend (**Route Guards, RxJS Observables, Interceptors**) and RESTful API backend using JWT tokens, implementing RBAC serving **100K+ concurrent users**.
- Built **distributed ETL pipeline** automating payroll validation for **100K+ records per batch** using Python and Pentaho, reducing manual QA effort by **90%** and accelerating release cycles across production systems.
- Developed high-performance **type-ahead search component** efficiently querying and filtering **100K+ records** with sub-second response times, improving user experience by **70%** through backend indexing and frontend debouncing.
- Automated **log monitoring and alerting** by building a Python script to parse **50+ daily S3 logs**, categorize errors by severity and team, and distribute reports across **4 engineering teams**, reducing **incident detection time by 50%**.
- Led team of **3 engineers** through Agile sprints, implementing **TDD practices, code reviews, and pair programming**, improving code quality and team velocity while delivering features on schedule.

## Projects

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### RAFT Consensus Implementation | Python, RPC, Threading, WebSockets, React

GitHub

- Built a production-grade **RAFT consensus engine** for a **3-node cluster** with RPC-based inter-node communication, **leader election, log replication**, to guarantee strong consistency and **prevent split-brain** scenarios.
- Built a **real-time visualization dashboard** (React and WebSockets) to surface **live RAFT internals** (leader/follower roles, term/log evolution, RPC flows, commit progress), demonstrating strong **distributed systems observability**.

### AI-Powered Document Query System | Python, LangChain, ChromaDB, RAG, Ollama

GitHub

- Developed a **Retrieval-Augmented Generation (RAG) system** using LangChain and ChromaDB for intelligent **document querying**, enabling contextual Q&A across diverse PDF formats through vector embeddings and semantic.

## Certifications

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### AWS Developer Associate Certification

### AWS Cloud Practitioner Certification