

Christian Alejandro Fuentes Estrada

Senior Software Engineer and AI Consultant

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Professional Summary

Senior Software Engineer and AI Consultant with 10+ years of experience designing and delivering scalable, cloud-native, and distributed systems across financial, healthcare, and technology sectors. Experienced in building high-availability platforms, event-driven architectures, and AI-powered data systems using Node.js, Python, TypeScript, Java, C#, React, and multi-cloud environments (AWS, GCP, Azure).

Proven track record architecting microservices, serverless platforms, intelligent document processing systems, and large-scale data pipelines. Specialized in leveraging AI coding agents to accelerate development cycles and securely integrating modern AI services and LLMs (Amazon Bedrock, Azure OpenAI) into enterprise-grade applications. Adept at translating complex business constraints into robust, maintainable architectures based on TOGAF principles.

Strong background in system architecture, performance optimization, CI/CD automation, and observability, consistently improving reliability, scalability, and operational efficiency in complex production environments. Recognized for technical leadership and cross-functional collaboration, mentoring engineers, driving architectural decisions, and continuously bridging the gap between cutting-edge AI research and practical enterprise applications while pursuing a Master's in Artificial Intelligence.

Key Achievements

- **Offline-First & Edge Resiliency:** Engineered mission-critical, local-first mobile architectures paired with real-time event-driven backends, guaranteeing zero-data-loss synchronization and optimizing device resource consumption (e.g., 35% battery savings) in extreme zero-connectivity environments.
- **Enterprise AI Orchestration & IDP:** Designed pluggable, model-agnostic AI provider layers and Intelligent Document Processing (IDP) pipelines using AWS architectures, enabling seamless enterprise LLM integrations (Amazon Bedrock, Amazon Q) and highly scalable automated document workflows.
- **Cloud Architecture Leadership:** Designed multi-cloud architectures in AWS/GCP capable of handling >45% traffic growth without performance impact.
- **Continuous Development Enablement:** Implemented Gitpod to establish cloud-based development environments, streamlining onboarding, improving development consistency, and enabling faster iteration cycles.
- **Pipeline Optimization:** Delivered robust CI/CD pipelines reducing deployment times and failures.
- **Team Management:** Led multiple engineering squads, mentored junior developers into senior roles, and established coding standards.
- **Data & AI Solutions:** Contributed to the design and development of large-scale data collection and annotation platforms, delivering multimodal datasets and AI training pipelines for leading global technology companies.
- **Observability & Security:** Enhanced production stability with Sentry and Datadog, improved security posture using Snyk.io, and implemented proactive monitoring with OpenTelemetry.
- **Cross-Functional Collaboration:** Worked directly with QA, DevOps, Product, and Architecture teams to align business needs with technical delivery.

Professional Experience

Senior Software Engineer and AI Consultant

Independent Consultant for FSM Enterprise | *March 2026 – Present*

- Architected and delivered a multi-tenant, offline-first Field Service Management (FSM) mobile ecosystem using React Native, Expo, and FlashList, improving field technicians' operational efficiency in zero-connectivity zones.
- Engineered a local-first data persistence layer using SQLite and Drizzle ORM, retaining critical chat history and participant profiles upon session logout to guarantee instant data access in remote mining facilities.
- Designed a highly resilient AWS microservices backend powered by Amazon EKS and Amazon RDS for PostgreSQL, ensuring secure tenant data isolation and supporting complex synchronization queues.
- Developed a real-time event-driven communication network utilizing Socket.io, GCP Cloud Functions, and Firebase Notifications to stream delta synchronization states and push alerts instantly.
- Optimized device battery longevity by 35% during continuous field usage by consolidating multiple WebSocket channels and background GPS tracking telemetry into a unified Connection Singleton.
- Integrated enterprise-grade observability using Firebase Performance Monitoring and Crashlytics to proactively track app startup constraints, Core Web Vitals, and custom code traces.
- Implemented a comprehensive Full-Text In-Room Search Strategy executing hybrid local SQLite queries with automatic cloud failover mechanisms.
- Orchestrated AI coding agents (Cursor, Antigravity) to generate robust boilerplates, refactor complex UI hooks, and accelerate delivery timelines while maintaining strict code review standards.

Software Developer

HatchWorks Technologies Inc. | *November 2025 – March 2026*

- Developed a backend orchestration service coordinating workflows and two-way messaging using scheduled triggers, queues, and webhooks, built on an event-driven AWS architecture with an internal operations dashboard.
- Architected a hexagonal (ports-and-adapters) backend in TypeScript/Node.js, isolating domain logic from infrastructure and external services to improve modularity, maintainability, and testability.
- Implemented a single-Lambda multi-trigger event model handling EventBridge, SQS, API Gateway, and Amazon Connect with type-safe command dispatch and adapter-based event normalization.
- Built inbound messaging and contact center flows including intent detection, scheduling actions, and notification delivery integrated with internal APIs and DynamoDB.
- Designed a pluggable AI provider layer supporting Amazon Bedrock, Amazon Q, and rule-based processing using feature flags to switch backends without modifying use-case logic.
- Implemented DynamoDB repositories with GSIs for conversations and messages, plus idempotent SQS batch handling to ensure reliable notifications and retries.
- Optimized high-traffic API paths by reducing Lambda cold starts and improving runtime performance.
- Developed an internal Next.js dashboard to provide operational visibility into conversations, events, and system behavior.
- Built CI pipelines with automated testing, coverage, linting, and type checks to enforce code quality and prevent regressions.
- Contributed to the development of an Intelligent Document Processing (IDP) platform with a web interface for managing document processors, schema versioning, training workflows, and AWS-based document pipelines.
- Designed a hexagonal backend architecture (Node.js/Express) with domain isolation and a single composition root, enabling easier testing and interchangeable infrastructure adapters.

- Implemented processor schema versioning with DynamoDB and AppSync, supporting draft/active workflows, rollback capability, and audit tracking.
- Built repository adapters with AppSync-first and DynamoDB fallback strategies and cursor-based pagination to support large processor datasets efficiently.
- Consolidated multiple APIs into a unified dashboard endpoint, reducing frontend round-trips and simplifying data flow.
- Developed React dashboard interfaces with caching and pagination, improving performance and usability at scale.
- Implemented a shared API client with Cognito token caching and request deduplication to reduce authentication overhead and improve response times.
- Defined Terraform infrastructure modules for AWS services including S3, DynamoDB tables with GSIs, and event-driven processing pipelines.
- Introduced end-to-end testing and CI quality checks to improve reliability and release confidence.
- **Key Technologies:** TypeScript, JavaScript, Python, Node.js, Express, NestJS, Fastify, React, Next.js, Tailwind CSS, TanStack Query, Zod, AWS Lambda, Amazon DynamoDB, Amazon S3, Amazon SQS, Amazon EventBridge, Amazon EventBridge Scheduler, AWS Step Functions, Amazon API Gateway, Amazon Connect, Amazon Q Connect, AWS AppSync, Amazon Bedrock, Amazon Textract, Amazon SageMaker, Amazon SNS, AWS Glue, Amazon Athena, Amazon CloudFront, Amazon Cognito, AWS IAM, AWS KMS, AWS Systems Manager, Amazon CloudWatch, Terraform, Docker, GitHub Actions, Datadog, LaunchDarkly, Twilio, Courier, Vitest, Playwright.

Senior Software Engineer

Mriti Infosystems | *September 2022 – November 2025*

- Led the design, development, and implementation of high-impact projects across multiple clients and industries, improving system efficiency by 35% and reducing operational costs by 15% through AWS, GCP, and Azure cloud-native architectures and automation.
- Directed the implementation of microservices in Node.js and microfrontends in React, ensuring scalability and resilience in enterprise systems across diverse client environments.
- Implemented Redux Toolkit with Thunks for client-state and side-effects, improving render times and debuggability.
- Built and operated high-availability REST APIs in Java and Spring Boot with TDD and CI/CD quality gates.
- Achieved 99.9% system uptime by integrating Sentry for error tracking, Datadog and Dynatrace for monitoring, and Snyk.io for dependency vulnerability scanning.
- Integrated Azure AI services, including Azure OpenAI Service, Azure Cognitive Search, and Azure AI Document Intelligence (Form Recognizer), into customer-facing features for semantic search, summarization, and automated document extraction; enforced PII safeguards and end-to-end observability.
- As part of the leadership team, contributed to the development and continuous updates of corporate applications for security, team management, and operational efficiency, serving over 100,000 employees worldwide.
- Authored ADRs, API guides (Swagger), runbooks, and deployment playbooks, reducing onboarding time and MTTR across distributed teams and client projects.
- In Data & AI Solutions, collaborated in the design and development of Data Collection applications to deliver high-quality, multimodal datasets at scale for AI model training, leveraging a community of over one million contributors, custom data gathering tools, and robust quality control processes for multiple global clients.

- Participated in the creation of Data Annotation platforms to transform raw, ambiguous data into contextually enriched datasets using Ground Truth Studio and a globally distributed workforce for high-accuracy labeling.
- Actively contributed to the development of tailored AI and data-driven applications for leading global technology and AI companies across various concurrent projects, ensuring alignment with industry-specific requirements and best practices.
- Integrated Generative AI solutions for AI model training, data annotation, and labeling pipelines across different client initiatives.
- Built and optimized CI/CD pipelines using GitHub Actions, Cloud Build, and integrated Gitpod as part of the continuous development strategy, enabling standardized cloud-based development environments for multiple teams and reducing setup time for new developers across projects.
- Delivered Chrome extensions and custom developer tools to improve productivity in multi-project environments.
- Advised on the adoption, development, and integration of clinical laboratory technologies, including LIS, ERP, and internal control systems.
- Integrated medical equipment with information systems, improving interoperability, data flow alignment, and laboratory process automation.
- **Key Technologies:** GCP, AWS, Azure, Java, Redux Toolkit/Thunks, Spring Boot, Spring MVC, C#, .NET, Elasticsearch, Node.js, React, Next.js, TypeScript, PostgreSQL, Prisma ORM, MongoDB, Docker, Kubernetes, GitHub Actions, OpenTelemetry, Swagger, Datadog, Sentry, Snyk.io, Ground Truth Studio, Generative AI, Azure OpenAI Service, Azure Cognitive Search, Azure AI Document Intelligence, OAuth2/OIDC.

Lead Software Engineer

Instituto Guatemalteco de Seguridad Social | June 2019 – September 2022

- Directed initiatives to modernize and maintain critical systems, achieving a 50% increase in reliability and reducing downtime by 35% through proactive monitoring and optimization.
- Delivered responsive, accessible React front-ends, improving Core Web Vitals and consistency across devices.
- Improved patient data management workflows and optimized backend integrations for faster service delivery in healthcare systems.
- Led the migration to Spring Boot with hardened security (OAuth2/OIDC, JWT) and end-to-end observability (Sentry).
- Coordinated cross-functional teams including QA, DevOps, and Product for high-quality delivery.
- Implemented and maintained cloud deployments (AWS, Azure) and modern database architectures.
- Introduced Sentry for real-time error tracking to improve incident response.
- **Key Technologies:** Java, Node.js, React, Nest.js, Next.js, .NET, C#, Angular, Spring Boot, Spring MVC, Redux Toolkit, Azure, GCP, Docker, Jenkins, Oracle Database, MySQL, SQL Server, Sentry, Tailwind, SCSS, NgRx, Material UI, Dynatrace.

Software Engineer

Unidad Ejecutora de Conservación Vial -COVIAL- Ministerio de Comunicaciones, Infraestructura y Vivienda, Guatemala | January 2019 – June 2019

- Oversaw the development and enhancement of mission-critical systems for national infrastructure projects.

- Developed and integrated systems for road infrastructure monitoring and project management, ensuring compliance with governmental data security standards.
- Coordinated cross-functional teams including QA, DevOps, and Product for high-quality delivery.
- Implemented and maintained cloud deployments (Azure, GCP) and modern database architectures.
- Introduced Sentry for real-time error tracking to improve incident response.
- **Key Technologies:** Java, Node.js, React, Nest.js, Next.js, .NET, Angular, Azure, GCP, Docker, Jenkins, Oracle Database, MySQL, SQL Server, Sentry, Tailwind, SCSS, NgRx, Material UI, New Relic.

Software Engineer – Banking Solutions (Consultant)

Itprofis S.A. | February 2018 – January 2019

- Served as an outsourced expert consultant for the online banking platform of one of the most important banks in the region.
- Participated in the development of the national, international, and U.S. sister bank platforms.
- Led the design and implementation of a microfrontend architecture to improve modularity, scalability, and independent deployment of different banking modules.
- Built indexing pipelines in Elasticsearch with custom mappings and analyzers to support full-text and faceted search for banking modules.
- Collaborated closely with cross-border teams to ensure compliance with regional regulations and seamless integration between services.
- Managed cloud infrastructure and database optimization for high-volume financial transactions.
- Ensured the platform met strict security, performance, and availability requirements for mission-critical banking operations.
- **Key Technologies:** Java, React, Node.js, Express.js, Spring Boot, C#, .NET Core, .NET Entity Framework, Elasticsearch, Razor, Ruby on Rails, Azure, CI/CD, Jenkins, SQL Server, GitHub, GitLab, Microfrontends architecture, GraphQL.

Software Developer and Business Analyst

Web Application for the Bill of Materials (BOM) for MSMEs of Quetzaltenango

June 2017 – December 2017

- Led a development team through the full lifecycle of a web application to improve production, inventory, and sales management for local MSMEs.
- Coordinated directly with business stakeholders to define requirements and prioritize features.
- Designed the system architecture and assigned development tasks, ensuring timely delivery and code quality.
- Guided deployment and provided user training, enabling smooth adoption and measurable productivity gains.
- **Key Technologies:** PHP, jQuery, JavaScript, HTML5, CSS, Apache, MySQL.

Freelance Software Engineer

January 2016 – June 2017

- Led and developed multiple high-impact projects, consistently delivering high-quality software solutions across various industries.
- **Financial Product:** Developed a secure and efficient financial platform using .NET Core and React, handling complex transactions.
- **Online Store:** Built an e-commerce solution with Node.js and Angular, featuring responsive design and integrated payment systems.

- **ERP System:** Created an ERP platform with Node.js and React to optimize business operations and enhance workflow efficiency.
- **Real-Time Geolocation Tracking:** Engineered a mobile tracking system using React Native and .NET Core for accurate, real-time data tracking.
- Architected cloud solutions in AWS and GCP, using modern stacks (React, Node.js, .NET Core, Docker, Kubernetes).
- **Key Technologies:** React, TypeScript, JavaScript, Node.js, Nest.js, Express.js, C#, .NET Core, SQL Server, Java, Angular, Xamarin, NoSQL, GCP, AWS, CI/CD, Docker, Kubernetes, Microsoft Azure, REST.

Education

- **Master's Degree in Artificial Intelligence** | *The International University of La Rioja* (Completed, degree pending)
- **Postgraduate Degree in Technology Management** | *Universidad de San Carlos de Guatemala* (January 2020 – December 2020)
- **Bachelor's Degree in Systems Engineering, Information Technology, and Computer Science** | *Universidad Mesoamericana* (January 2014 – May 2018)

Core Competencies

Cloud & DevOps

- **AWS:** Lambda, ECS/Fargate, API Gateway, WAF, RDS/Aurora, DynamoDB, S3, CloudFront, CloudWatch, CloudFormation, CDK, Elastic Load Balancing, Auto Scaling, EventBridge, EventBridge Scheduler, Step Functions, SQS, SNS, Glue, Athena, Textract, Bedrock, SageMaker, Connect, Q Connect, IAM, KMS, Systems Manager (SSM, Parameter Store), CodeBuild.
- **GCP:** Cloud Run, Cloud Build, Pub/Sub, BigQuery, Firestore, Cloud Storage, Compute Engine, Vertex AI.
- **Azure:** App Service, Azure Functions, Azure DevOps, Event Grid, Azure SQL Database, Blob Storage, Kubernetes Service (AKS), Azure Monitor & Application Insights, Azure OpenAI Service, Azure Cognitive Search, Azure AI Document Intelligence, Azure AD (OAuth2/OIDC).
- **CI/CD:** GitHub Actions, Jenkins, Azure Pipelines, Infrastructure as Code (Terraform, CloudFormation, CDK), Blue/Green Deployments, Canary Releases.
- **Containers & Orchestration:** Docker, Kubernetes.

Languages & Frameworks

JavaScript, TypeScript, Python, Java, C#, Node.js, Express.js, NestJS, React.js, Next.js, Spring Boot, Spring MVC, Redux Toolkit, Redux Thunk, .NET, HTML5, CSS3, SCSS, Tailwind CSS, Webpack.

Architecture & Design

Microservices, Microfrontends, Cloud-Native Architectures, Serverless Computing, Event-Driven Systems, Hexagonal Architecture (Ports & Adapters), API Design (REST, GraphQL), Scalable & Resilient Systems, Security-Driven Design, Performance Optimization.

Databases & Data

PostgreSQL, MongoDB, MySQL, Oracle, SQL Server, Amazon DynamoDB, CouchDB, NoSQL Architectures, Database Scaling & Optimization, Data Pipelines, Large-Scale Data Processing.

Observability & Security

OpenTelemetry, Dynatrace, New Relic, Datadog, Sentry, Snyk.io, AWS CloudWatch, OAuth2/OIDC, JWT, Vulnerability Scanning, Secure SDLC, Threat Modeling, Application Security Best Practices.

AI & Data Platforms

Amazon Bedrock, Amazon SageMaker, Vertex AI, Azure OpenAI Service, Azure Cognitive Search, Azure AI Document Intelligence, AI-driven data pipelines, data annotation platforms, intelligent document processing systems.

Methodologies & Engineering Practices

- **Methodologies:** Agile (Scrum, Kanban), Test-Driven Development (TDD), CI/CD Optimization, Automation, Performance Tuning, Continuous Improvement, Quality Gates, End-to-End Testing, Infrastructure Automation.
- **Leadership & Collaboration:** Technical leadership, team mentoring, code reviews, architecture design, cross-functional collaboration (QA, DevOps, Product, Architecture), stakeholder communication, roadmap planning, agile delivery, technical decision-making, conflict resolution.

Agentic Software Engineering Methodology

I leverage a structured Human-in-the-Loop methodology to multiply engineering velocity without compromising security or architectural integrity:

1. **Context & Guardrails First:** Inject deep business and technical context (architectural rules, TDD workflows, and enterprise boundaries) before any AI generation.
2. **Human-in-the-Loop Orchestration:** Define architecture and acceptance criteria; agents (Cursor, Claude code, Codex, Github Copilot, Antigravity) propose a plan, which I evaluate, refine, and approve.
3. **Rigorous Auditing & Security:** Enforce human and AI cross-validation, TDD, and strict compliance with OWASP Top 10 for AI & LLMs, GDPR, and enterprise security standards.
4. **Team Empowerment:** Create custom technical guides and standardized workflows to enable engineering squads to leverage AI tools safely and effectively.
5. **Delivery, DevOps & Observability:** Integrate CI/CD pipelines, secure infrastructure as code, and robust observability from day one to guarantee scalable deployments.