

Alex Jolicoeur

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I am a Backend Engineer and AWS Certified Solutions Architect with 12 years of experience building scalable systems, having served as a founding engineer across multiple settings. Throughout my career, I have designed, developed, and automated data pipelines and ML operations, with a consistent focus on balancing system performance, reliability, and cost efficiency. I'm committed to continuous learning and delivering impactful results with my team.

Skills

- **Programming Languages:** Python, JavaScript, C, Bash, SQL
- **Frameworks & Libraries:** Django, Flask, FastAPI, ExpressJS, REST APIs, JWT, OAuth, Pandas
- **Workflow Orchestration:** Apache Airflow, AWS Step Functions, Databricks Workflows
- **Data Storage:** AWS S3, DynamoDB, RDS (PostgreSQL); Elasticsearch; GCP GCS, BigTable; MongoDB, Databricks Delta Tables, InfluxDB
- **Data Warehousing:** AWS Redshift, Athena, Glue; GCP BigQuery; Databricks Lakehouse
- **Caching:** Redis/Valkey, Memcached, AWS CloudFront
- **Messaging & Event Streaming:** AWS IoT Core, SQS, SNS, EventBridge, Kinesis Streams, Flink; GCP Cloud Tasks; Celery
- **Compute & Containerization:** Docker, Kubernetes, Apache Spark; AWS Lambda, EC2, ECS, EKS, Batch; GCP GCE, GAE
- **AI & LLM Orchestration:** AWS AgentCore, Agentic RAG, Function Calling/Tool-Use, Prompt Engineering
- **IIoT & Edge Computing:** SCADA, CanaryLabs Historian, MQTT, IT/OT Networking
- **Monitoring & Logging:** AWS CloudWatch, CloudTrail; Grafana, Prometheus
- **DevOps & CI/CD:** Terraform, AWS CloudFormation, Alembic, GitHub Actions, Jenkins

Work Experience

Founding Software Engineer | Windfall Bio (Series A) | 04/2025 – 01/2026 | Impacted by company-wide workforce reduction

- Architected a high-scale IoT platform for a Houston demonstration plant, engineering a real-time pipeline from PLCs to InfluxDB via MQTT, AWS IoT Core, SQS, and Lambda.
- Designed IT/OT network architecture and managed third-party integrators to deploy CanaryLabs Historian, bridging industrial hardware with cloud-native processing and storage
- Built a scalable analytics engine using AWS Kinesis, Flink, and Glue; automated carbon certification and GHG reporting by centralizing industrial data and analytics results in an S3/Athena warehouse
- Reduced API latency by 90% (2s to 50ms) for a 500M+ datapoint dataset through PostgreSQL schema/query refactoring, index optimization, and custom caching middleware
- Led a workload migration from PostgreSQL to InfluxDB, increasing write throughput and storage efficiency for high-frequency sensor data
- Developed an Agentic RAG system using Claude and AWS AgentCore; built Python-based tool-calling logic to extract features from complex fermentation data for natural language synthesis

Principal Software Engineer | Blue River Technology, a John Deere company | 05/2018 – 02/2025
Autonomy Team | 03/2021 – 02/2025

- Developed and automated data ingestion, feature extraction, and labeling pipelines, while optimizing model training and evaluation workflows in close collaboration with the robotics and machine learning teams using Python, Docker, AWS, and Apache Airflow

- Admin of the Autonomy Team's AWS account; Developed and maintained Terraform modules to manage resource deployments for autonomy subteams. Reduced AWS spending by ~40% by tagging and terminating unused resources, integrating storage tiering, and optimizing compute usage
- Streamlined CI/CD processes by migrating on-premise TeamCity workflows to GitHub Actions, enhancing reliability, simplifying operations, and accelerating build times
- Coached junior engineers, on-boarded new team members, and directly managed a summer intern through improvements to the automated image labeling system and cost analysis of the image labeling system from design to implementation

Data Platform Team | 05/2018 – 03/2021

- As a founding member of the data platform team, spearheaded the development and scaling of the data storage layer, REST API, data ingestion pipeline, labeling service integrations, and dataset management services using Python, Docker, AWS (S3, ECS, RDS: PostgreSQL), and MongoDB
- Supported onboarding of new autonomy project teams and scaled above Data Platform services as the company's annual data collection volume grew to over 250M images per year
- Prototyped near real-time machine metrics alerting and visualization system for debugging robotics issues using AWS IoT, Kinesis, S3, DynamoDB, and Grafana
- Developed an integrated data warehouse solution using AWS S3, Glue, and Athena to serve business analytics and ad-hoc explorative query use cases on image datasets with up to 500M records
- Developed and maintained deployment of Kubeflow on AWS EKS used by both the platform and project teams to orchestrate pipelines and host notebook servers for machine learning and business use cases

Full Stack Software Engineer | Frontapp Inc. | 02/2017 – 07/2017

- Developed and maintained full-stack features and integrations with third-party services using Node.js, ExpressJS, AWS (ECS, RDS: MySQL), and AngularJS, HTML5, and CSS3 while ensuring scalable and high-performing application functionality through comprehensive platform testing
- Developed internal tools, including a dashboard for monitoring, debugging, and retrying tasks in backend processes, significantly improving efficiency and streamlining customer onboarding
- Managed and resolved customer support requests, diagnosing and addressing technical issues related to backend services and infrastructure

Backend Software Engineer | StarMaker Interactive Inc. | 03/2014 – 12/2016

- Developed, scaled, and maintained the data storage layer and backend services including a REST API and video transcoding service, and YouTube API integration for the video karaoke mobile app features using Python, Flask, Docker, and GCP (BigTable, GAE, GCE, GCS, Memcached)
- Developed internal tools for engineering and product teams, including a video moderation tool enabling rapid user generated content moderation, and admin content management interfaces for near-instant updates of dynamic content in the mobile app resulting in improved workflow efficiency and product control (AngularJS, HTML, CSS)
- After acquisition, migrated infrastructure and backend services from GCP to AWS (RDS: MySQL, ECS, SQS, Redis, S3)

Education and Certifications

BS in Computer Science | University of California, Santa Cruz

AWS Certified Solutions Architect Associate (498744110)