

Michael L. Welles

Address: 38 Covert St, Brooklyn NY 11207 | Phone: 917-586-9218 | Email: mlwelles@gmail.com | Technical lead for real-time flight telemetry data platform: Built streaming pipelines (Databricks, Spark, Python) processing thousands of engine sensors through fault detection and anomaly detection models. System triggered severity-based automated alerts from emergency grounding to routine inspection scheduling for Pratt & Whitney commercial jet engines.

Overview

Principal engineer with 15+ years building data platforms, distributed systems, and safety-critical applications. Proven track record leading technical architecture at ecosystem level—from real-time streaming telemetry pipelines processing thousands of sensors to data governance and ML orchestration. I champion pragmatic engineering discipline through hands-on technical leadership, establishing robust foundations that enable innovation while maintaining operational excellence. Deep expertise in modern data technology end-to-end including data integration, transformation, streaming, governance, business intelligence, and cloud-native architectures. Partner cross-functionally to align technical strategy with business outcomes and mentor engineers through "show and tell" culture.

Core Technologies

Data & Cloud: Databricks, Spark, PostgreSQL, DynamoDB, Elasticsearch, AWS (SQS/SNS, S3, SageMaker), Azure, Terraform, Kubernetes, Docker ****Languages & Frameworks:**** Python, Rust, Go, TypeScript, Swift, Kotlin, Java ****Data Architecture:**** Data pipelines, streaming, ETL/ELT, data modeling, message queues, pub/sub, event-driven architecture ****Engineering Discipline:**** CI/CD, distributed tracing, observability, SLOs/alerting, incident response, agile delivery

Experience

Consulting Principal Engineer, CubeNexus.ai

Aug 2025 - Present · Remote

Technical advisor for geospatial intelligence platform with LLM-based querying and 3D visualization. Architected and rebuilt ingestion pipeline handling multi-terabyte datasets using PySpark and Pandas. Implemented real-time telemetry streaming with event-driven architecture. Hardened API backend (Python/FastAPI) and established CI/CD across repositories.

Principal Engineer, Istari Digital

Feb 2024 - Jul 2025 · New York, NY

Technical and architectural leader for zero-trust digital collaboration platform connecting engineering tools (Cameo, CATIA, Nastran, OpenFOAM) for programmatic and AI-assisted workflow automation.

- Designed cryptographically verified asset lineage and DoD-compliant control tagging, enabling zero-knowledge collaboration, data sovereignty, and provenance tracking for sensitive engineering data without exposing payloads.
- Led team building secure backend registry service (Python, FastAPI, SQLAlchemy, PostgreSQL, Zanzibar, Authzed) and SDK. Designed database schema for complex asset relationships and metadata, tuned queries for lineage traversal, and managed zero-downtime migrations.
- Championed architecture decisions connecting compliance requirements to technical implementation. Ensured CI/CD validated all requirements on each release, publishing results for ATO submission to minimize approval effort for deployment on secure and classified networks.
- Delivered all major milestones on time and successfully relaunched product for commercial and government clients.

Director of Software Development, Raytheon Technologies

Sep 2021 - Nov 2023 · New York, NY

Led development of next-generation data platform for aerospace applications at Enterprise Data Services (formerly UTC Digital Accelerator).

- ****Architected ML model training and orchestration pipeline**** with comprehensive audit trails tracing every output field to specific code revisions or model versions. Implemented parallel evaluation of multiple models without adding latency using asynchronous patterns and concurrent processing.
- ****Provided technical thought leadership**** for data ecosystem serving 40+ teams adopting Databricks platform. Led team of 14 developers across three agile projects while supervising onboarding and migration support.
- Collaborated with cross-functional teams on technology strategy, performed impact analysis across multiple systems, and represented data engineering in technical forums.

Head of Technology, Dayforward

Jan 2020 - Sep 2021 · New York, NY

Head of technology and development lead for life-insurance startup. Led small team designing and building algorithmic underwriting and policy-management platform.

- Built platform with Go microservices on Kubernetes, federated GraphQL API, and Vue.js frontend. Completed initial development in under ten months, launching same day as regulatory approval.
- Architected mission-critical enterprise system handling sensitive financial and health data with strict compliance requirements.

Director of Software Engineering, UTC Aerospace Systems

Feb 2019 - Jan 2020 · Brooklyn, NY

Managed team of 17 engineers at UTC Digital Accelerator. Oversaw multiple project teams from IoT sensors and mobile apps for industrial refrigeration to standardized design systems and developer tools. Led efforts to normalize, document, and evangelize engineering processes, standards, and best practices as frontend engineering director.

Lead Engineer / Chief Technologist, Riverdrop

Jan 2018 - Feb 2019 · New York, NY

Chief technologist for early-stage startup. Led team of three senior engineers building specialized product search engine.

- ****Designed ML-driven ETL pipeline**** (Python, spaCy, NLTK, scikit-learn) for product identification and NLP-based entity extraction. Built image recognition and classification models on AWS SageMaker using OpenCV and scikit-image for preprocessing and color analysis.
- ****Built asynchronous data flow**** using AWS SQS/SNS for event-driven processing with DynamoDB for metadata storage. Implemented retry logic, dead-letter queues, and idempotency for reliable processing at scale.
- ****Architected microservices system**** with discrete transformation steps, each packaged as Docker images and deployed via CI/CD to Kubernetes (built and managed with Terraform). Developed search API in Go against Elasticsearch indexes.

Director of Engineering (Mobile), MediData

Feb 2017 - Jan 2018 · New York, NY

Led engineering teams for Patient Cloud platform collecting clinical trial data from patients and clinicians via mobile devices and wearable sensors.

- Managed products including ePRO (iOS/Android patient outcomes), Patient Cloud (iOS clinician outcomes), AppConnect (native SDK), Sensor Link (wearables platform), and supporting backend systems.
- Instituted organizational and process improvements increasing average team velocity by 2.5x. Launched two major mobile initiatives and migrated all native development to Swift and Kotlin.

Principal Architect / Director of Mobile, Huge

May 2013 - Feb 2017 · Brooklyn, NY

Led cross-functional team of 20+ iOS, Android, and backend engineers, QA analysts, designers, and product managers. Evangelized agile best practices, continuous integration, and continuous delivery.

- Instituted engineering guild system for cross-office knowledge sharing and formal sponsorship of guild-proposed R&D initiatives. One guild-led initiative generated new product proposal securing \$5M development contract.
- Championed innovation through technology investigations, engineering blog, meetups, and open-source contributions.
- Directed notable client projects including smart Bluetooth audio/video accessories, game companion apps, and B2B/B2C mobile commerce applications.

Manager of Mobile Technology, Consumer Reports

Jul 2011 - May 2013 · Yonkers, NY

Founded mobile applications group and built in-house team for iOS/Android development. Developed and launched flagship ratings application. Managed external vendors maintaining portfolio of legacy apps.

Senior Software Engineer – iTunes Store Video Workflow Group, Apple

Mar 2008 - May 2011 · Cupertino, CA

Senior engineer on team of five responsible for encoding and assembling all iTunes video media. Owned encoding toolchain used by processing cluster, specified deliverable media formats, developed validation test suites, and created reference media for hardware compliance testing. Led two major workflow rewrites for HDTV launch and international video expansion.

Senior Software Architect, The New York Times

Aug 2007 - Mar 2008 · New York, NY

Created tools for managing releases and production deployment. Oversaw offshore CMS development.

Founder, Partner, Bangstate

Jun 1999 - Mar 2008 · New York, NY

Founded and managed five-person development consultancy. Oversaw business and delivered projects for clients including The Associated Press, American Bar Association, Atlantic Records, Forbes Magazine, CIR/SEIU, and Time Inc.

Education

Bachelor of Arts in History, The University of Chicago

Chicago, IL