Michael L. Welles

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Overview

Hands-on engineering leader with 12+ years building intelligent, data-driven systems that drive growth and revenue. Proven track record leading cross-functional teams to deliver complex platforms—from AI-augmented workflows to growth systems spanning acquisition, onboarding, and expansion. I combine strategic architecture with hands-on execution, shipping AI-integrated products while establishing patterns for experimentation, observability, and continuous optimization. Experience scaling engineering organizations (led teams up to 20+), accelerating velocity (achieved 2.5× increase at MediData), and driving technical roadmaps in highly regulated and growth-focused environments.

Core Technologies

Languages & Frameworks: Python, Go, Typescript, Rust, Swift, Kotlin, Java **AI/ML & Data:** ML model integration, experimentation frameworks, Databricks, Spark, SageMaker, scikit-learn, spaCy **Databases & Search:** PostgreSQL, DynamoDB, Elasticsearch **Cloud & Infrastructure:** Kubernetes, Docker, AWS (SQS/SNS, S3, SageMaker), Azure, Terraform **Growth & Observability:** A/B testing, feature flags, metrics/logging, distributed tracing, SLOs/alerting **Web Architecture:** GraphQL, FastAPI, performance optimization, API design, frontend integration

Experience

Consulting Principal Engineer, CubeNexus.ai

Aug 2025 - Present · Remote

Advising on technical strategy for a geospatial intelligence platform with LLM-based querying and 3D visualization. Rebuilt ingestion pipeline to handle multi-terabyte datasets (PySpark, Pandas), added 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

Istari Digital enables zero-trust digital collaboration for cyber-physical systems, connecting engineering tools to enable programmatic and AI-assisted automation of digital engineering workflows.

- Led AI-augmented workflow automation platform enabling intelligent orchestration of engineering tools—designed for learning loops and continuous improvement through user feedback and model-driven insights.
- Built backend platform (Python, FastAPI, PostgreSQL) with SDK integrations for automation agents. Designed database schema for complex relationship traversal, tuned queries for performance, and managed zero-downtime migrations.
- Established observability and reliability patterns: comprehensive logging, distributed tracing, and automated compliance validation in CI/CD. Delivered all major milestones on time and successfully relaunched product for commercial and government clients.
- Mentored engineering team on API design, testing strategies, and code quality practices.

Director of Software Development, Raytheon Technologies

Sep 2021 - Nov 2023 · New York, NY

Led development of next-generation data platform for Raytheon aerospace applications at Enterprise Data Services.

- Technical lead for real-time flight telemetry pipelines processing thousands of engine sensors through ML-based fault detection and anomaly detection models. Built streaming platform (Databricks, Spark, Python) triggering severity-based automated alerts from emergency grounding to routine inspection.
- Designed ML model training and orchestration pipeline with comprehensive audit trails. Implemented parallel evaluation of multiple models without adding latency using asynchronous patterns—critical for safe model usage in safety-critical contexts.
- Established best practices for model evaluation and observability: comprehensive testing, performance monitoring, and gradual rollout strategies to validate model behavior before full deployment.
- Led "inner-source" initiative creating reusable SDKs and quickstart kits adopted by 40+ teams, accelerating platform adoption and reducing time-to-value.
- Managed team of 14 developers across three agile projects while supervising onboarding and migration support.

Head of Technology, Dayforward

Head of technology for life-insurance startup. Led cross-functional team that designed and built algorithmic underwriting and policy-management platform driving customer acquisition and expansion.

- Built full-stack growth platform with Go microservices on Kubernetes, federated GraphQL API, and Vue.js frontend. Launched same day as regulatory approval after ten months of development.
- Designed intelligent underwriting system incorporating ML-driven risk scoring and personalized onboarding flows based on customer profile data—an AI-augmented experience tailored to user context.
- Partnered with product, sales, and operations teams to translate ambiguous business requirements into engineering solutions, balancing speed-to-market with technical quality and regulatory compliance.
- Established engineering practices for rapid iteration: feature flags for gradual rollout, observability for real-time monitoring, and automated testing to maintain quality at high velocity.

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 across the organization.

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 with intelligent recommendations and personalization.

- Designed ML-driven ETL pipeline (Python, spaCy, NLTK, scikit-learn) for product identification and NLP-based entity extraction, with image recognition and classification on AWS SageMaker. Built intelligent search experiences combining text and visual signals.
- Built asynchronous data flow using AWS SQS/SNS for event-driven processing with DynamoDB, implementing retry logic and idempotency for reliable processing. Developed search API in Go against Elasticsearch indexes and React.js/TypeScript frontend.
- Architected system as microservices deployed via CI/CD to Kubernetes (built with Terraform). Established observability patterns for monitoring pipeline health and search performance.
- Operated in highly cross-functional environment, partnering with product and business teams to prioritize features balancing user experience with technical complexity.

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 platform including ePRO (iOS/Android patient outcomes), Patient Cloud (iOS clinician outcomes), native SDK, wearables platform, and supporting backend. Launched two major mobile initiatives and migrated all native development to Swift and Kotlin.
- Instituted organizational and process improvements increasing average team velocity by 2.5×—streamlined sprint planning, improved code review practices, and automated quality gates in CI/CD.
- Established metrics-driven culture with clear SLOs for API performance, crash rates, and user engagement to inform prioritization and measure impact.

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 R&D initiatives. One guild-led initiative generated new product proposal securing a $5M development contract.
- Championed experimentation and innovation through technology investigations, engineering blog, meetups, and open-source contributions.
- Directed notable client projects including smart Bluetooth audio/video accessories with live streaming, companion app for AAA game publisher with computer vision for player scanning, and numerous B2B and 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 and 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 for 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.

Education

Bachelor of Arts in History, The University of Chicago

Chicago, IL