Matthew Klette

Software Engineer · Tracking, AI Automation & Full-Stack

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SUMMARY

Software engineer building since 2023, with two years full-time-equivalent on contract as the primary engineer for web and server-side tracking and consent at a US apparel brand. Builds AI agents and automations that run in production with guardrails: code computes the numbers, models interpret, outputs are checked, and a person approves every change. Ships full-stack and mobile software in TypeScript, React, .NET, Python and Kotlin, and runs MBK Consulting Group, an independent practice with its own SaaS and open-source tools. Final-year Application Development student (18 distinctions across two qualifications).

EXPERIENCE

Contract MarTech & Automation Engineer · US apparel brand

Dec 2024 – Present

Independent contractor · full-time-equivalent contract · remote from South Africa (UTC+2)

AI & AUTOMATION

- **Agentic ad-spend system.** Built a multi-agent system (Python, Claude, BigQuery, Cloud Run) that paces spend per channel, explains ROAS and CPA against forecast and last year, ranks Meta and Google Search creatives, scores landing pages on traffic against revenue, and drafts weekly creative briefs.
- **Production guardrails.** SQL and Python compute every number and the model only interprets. Read-only data access enforced in code, parameterised and byte-capped queries, schema and reconciliation checks, Haiku → Sonnet → Opus escalation, a human queue, per-run spend caps, and tests that prove no code path can write to an ad platform.
- **Model evaluation.** Ran a 60-case evaluation of a cheap-model-first cascade against a single model and kept the single model (85% vs 75% agreement) rather than ship the cheaper option.
- **Content pipeline.** Built 4 production n8n automations for product pages: drafted content reaches reviewers as Microsoft Teams approval cards, product data stays in sync, and failures route to one shared error handler.
- **Faster syncs.** Cut a product-data sync from about 57 minutes to about a minute with change-only updates and safe retries.
- **Privacy-compliance scanner.** Core contributor (Python, Playwright, FastAPI, PostgreSQL): headless scanning service, compliance checklist across six environment configurations, AI-generated reports, report delivery, database schema and CI.
- **Team AI tooling.** Built a Claude Code plugin marketplace for the marketing team with shared skills, safety hooks and per-team profiles; daily engineering runs on Claude Code with MCP integrations to Linear and n8n.

TRACKING & DATA

- **Ownership.** Primary engineer for web and server-side tagging and consent. Published 93% of web and 95% of server-side production releases in 2026, and every release from June to October 2026.
- **Release discipline.** Created 181 production GTM versions since January 2025 (111 web, 70 server-side), managed as code: mirrored to files, diffed, reviewed, shipped with a recorded rollback version and verified after publishing.
- **Server-side conversions.** Shipped Meta Conversions API and Google Ads server-side tags with browser/server deduplication, match-quality passthrough and consent gating, and aligned pixel and API product IDs with the catalog.
- **Consent and governance.** Added Consent Mode v2 checks to about a third of web tags, manage OneTrust for CCPA and GDPR, and own the security, data-quality, consent and maintainability reviews for the server-side container.
- **Data pipeline.** Nearly doubled the server-side event streams feeding the BigQuery warehouse; write the GA4 event specs the attribution tables are built from, with Looker Studio reporting on top.
- **Stakeholders.** Work with marketing leadership, data engineering and ad agencies: turn reporting needs into tracking specs, hand warehouse view designs to data engineering, and document every change.

Founder & Engineer · MBK Consulting Group Dec 2024 – Present

Independent practice · client work, own products and open-source tools

- **Pixel Check.** Self-serve SaaS that scans stores for broken GA4, GTM, Meta and ad-pixel setups: free scan, scheduled monitoring and agency plans (Cloudflare Pages, Workers, D1). trypixelcheck.com
- **Occupi.** Campus space analytics from existing Wi-Fi counts, for estates teams and students looking for a free seat (Next.js, TypeScript, Cloudflare Workers, SQLite, Vitest, Playwright, CI). occupiedu.com
- **Tagflow.** Release checks for Google Tag Manager: change diffs, pre-publish tests, named approvals and a daily consent and revenue monitor (TypeScript, GTM API, headless Chrome).
- **GS Code.** Open-source VS Code extension and CLI that mirrors a GTM workspace to files for diff, review, rollback and push, with its own MCP server so agents can work on a container safely.
- **Open source.** Synthetic Crowd (LLM persona testing, MIT), patch-audit (Go patch reviewer), inference-queue (Go batch-inference service) and the first working Hisense VIDAA support for couch-tv (2 merged PRs, reverse-engineered mutual-TLS MQTT auth).
- **Client and web builds.** Legislator-lookup and postcard tool for a US wildlife conservation campaign (Wix Velo, Geocodio), and live React, Next.js and three.js/WebGL sites designed and coded from scratch.

EDUCATION

Bachelor of Computer and Information Sciences in Application Development Completing 2026

Emeris (formerly IIE Varsity College) · 12 distinctions

Higher Certificate in Mobile Application and Web Development 2023

IIE Varsity College · 6 distinctions

COURSEWORK

- **Smart-X mission control** (PROG7312, solo). Control room for a 36-node ESP32 hydroponics mesh: signed device telemetry, a live command stream with undo, a mesh map that reroutes around failed nodes, and a suggestion engine that predicts threshold breaches from trends. AVL tree, binary heap, union-find, BFS/DFS, Dijkstra, Prim and Kruskal written by hand and benchmarked. 436 xUnit and 50 Vitest tests. HMAC-signed devices, TOTP sign-in, CSRF and rate limits behind a Caddy HTTPS gateway. Part 2 marked 100%. .NET 10, ASP.NET Core, SignalR, React 19, TypeScript, ESP32 (C++), Docker, Caddy.
- **TeeUp** (PROG7314, team of 3). Android golf app: book tee times, fill a four-ball with other players and keep live GPS scores, backed by its own API and database. 248 JUnit and 171 xUnit tests, offline sync, push notifications and biometric sign-in; prepared for the Play Store. Kotlin, Jetpack Compose, Room, Firebase, MapLibre, ASP.NET Core, PostgreSQL, Azure.
- **HustleHub+** (INSY7314, team of 3). A freelance marketplace built security-first: role-based access, CSRF protection, account lockout, session revocation and an audit log. I built the DevSecOps part: CI that runs Semgrep, gitleaks, Trivy and OWASP ZAP on every change, non-root Docker images and cloud logging. MongoDB, Express, React, Node.js, GitHub Actions, Docker.
- **Ingot** (PROG7313, team of 5). An Android budget tracker with receipts, savings goals, subscriptions, streaks and charts. I built the data layer, navigation, theme, home screen and goals. Kotlin, Firebase, MPAndroidChart.
- **Logistics management system** (PROG7311, solo). Clients, contracts and service requests for a logistics company, as an MVC web app over its own REST API. JWT auth, EF Core migrations on SQL Server, and unit plus integration tests with xUnit, Moq and WebApplicationFactory. ASP.NET Core MVC, Web API, EF Core, SQL Server, Docker.
- **Azure cloud apps** (CLDV6211, CLDV6212, solo). A venue booking system on Azure App Service with Azure SQL and Blob Storage, then a retail back end on Azure Storage tables, queues, blobs and file shares with Azure Functions. Marked 89% and 95%. Azure, ASP.NET Core, Azure SQL, Azure Storage, Azure Functions.
- **Delivery company database** (INSY7213, solo). Design and build of a relational database for a delivery company: ERD, tables, views, sequences, users and privileges with separation of duties, and PL/SQL reports. Marked 92%. Oracle SQL, PL/SQL, ERD.
- **Java, React Native and web foundations** (PROG5121, PROG6112, MAST5112, IMAD5112, WEDE5020, solo). Java console and object-oriented apps with unit tests, a React Native mobile app in TypeScript, a native Android app and hand-coded responsive websites. Mobile development 98%, web development 96%. Java, JUnit, React Native, TypeScript, Kotlin, HTML, CSS, JavaScript.

SKILLS

Languages	TypeScript, JavaScript, Python, C#, Kotlin, Java, SQL, Go, Swift, HTML & CSS
Measurement	Server-side & web GTM, Custom GTM templates, GA4, Meta CAPI & Pixel, Google Ads, Consent Mode v2, OneTrust, Microsoft Clarity, Klaviyo, Criteo & Bazaarvoice tags
AI & automation	Claude API, Claude Code skills, hooks & subagents, MCP integrations, n8n, Multi-agent systems, Model cascades & evals, Headless Chrome QA, Local image models
Frontend & motion	React, Next.js, Vite, Tailwind, three.js & WebGL2, GLSL shaders, GSAP & Lenis, Canvas 2D, Web Audio, d3, Accessibility (WCAG)
Backend	ASP.NET Core (.NET 10, MVC, Web API), SignalR, EF Core, Node.js & Express, FastAPI, Java, Cloudflare Workers, REST & OpenAPI

Mobile	Kotlin & Jetpack Compose (Android), Room, WorkManager & FCM, React Native (Expo), SwiftUI (macOS), Capacitor (iOS), On-device OCR & barcode scanning
Data	BigQuery SQL, PostgreSQL & Supabase, SQL Server & T-SQL, Oracle SQL & PL/SQL, MongoDB, Firebase, Redis, SQLite, Looker Studio
Cloud & delivery	Azure (App Service, SQL, Storage, Functions), Google Cloud (Cloud Run, Pub/Sub), Cloudflare Pages & D1, Vercel, Docker & Compose, Caddy & nginx, GitHub Actions, Git & GitHub
Security	Auth (password hashing, TOTP, sessions), CSRF, rate limits & lockout, HMAC-signed requests, AES-GCM encryption, Semgrep, gitleaks, Trivy & ZAP in CI, Threat modelling
Real-time & IoT	SignalR push, Background stream pipelines, ESP32 firmware (C++), Webhook, SMS & push alerts
Testing	Vitest & Testing Library, Playwright, xUnit & Moq, JUnit, pytest, BenchmarkDotNet
Foundations	Data structures & graph algorithms, Big-O & benchmarking, Networking (subnetting, VLANs, routing), UI/UX research & usability testing, Blender & ffmpeg pipelines

CERTIFICATIONS

Anthropic: Building with the Claude API · Tool Use with the Messages API · Introduction to Evals · Claude Platform 101 · Claude Code in Action · Model Context Protocol: Advanced Topics · Introduction to Subagents

Google: Google Ads Measurement · Google Ads Search · AI-Powered Shopping Ads

Neo4j: Neo4j Certified Professional · Neo4j & Generative AI · Neo4j Graph Data Science

Microsoft: Get started with generative AI and agents in Azure

Analytics Mania: Google Analytics Fundamentals · Google Tag Manager Fundamentals

Full academic record and live builds: mbkconsultinggroup-portfolio.vercel.app/#education. References available on request.