

JAMES C. YARBROUGH

SOFTWARE ENGINEER · DATA & AI

US Citizen · EU Long-Term Resident (Croatia). Authorized to work in the US and EU, no sponsorship required.

Remote (CET, overlaps US East Coast mornings) · Open to relocating to Charlotte, NC

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SUMMARY

Software engineer with 5+ years at Duolingo building production data and AI systems end-to-end. Sole engineer behind the analytics platform processing \$2M+ in annual contractor payments (195 scripts, 87K LOC). Ship full-stack products solo: two live SaaS platforms on Next.js, Supabase, and multi-provider LLMs. MS Data Science, 4.0 GPA. Published in Wiley.

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, SQL, Bash

Backend & Data: BigQuery, PostgreSQL, Supabase, Pandas, scikit-learn, ETL pipelines, Payload CMS

Frontend: Next.js, React, TypeScript, Tailwind CSS, shadcn/ui

AI / LLM: Google Gemini, Anthropic Claude, OpenAI, prompt engineering, vision AI, multi-provider abstraction

Cloud & DevOps: GCP, AWS, Vercel, GitHub Actions, Docker

APIs & Integration: REST, GraphQL, OAuth2, Stripe, Resend, Google APIs

EXPERIENCE

Data & Analytics Engineer

Oct 2022 – Apr 2026

Duolingo, Remote (Zagreb, Croatia)

- Built the analytics platform from scratch as sole engineer: 195 Python scripts, 87K LOC, powering all operational reporting for the proctoring team.
- Designed financial system processing \$2M+ in annual contractor payments across two billing systems with contract-specific markups and full audit trail.
- Deployed 10 GitHub Actions CI/CD workflows with hourly/daily/weekly cron schedules, authenticating to AWS via an OIDC-federated IAM role (no long-lived credentials), plus a self-hosted runner for memory-intensive jobs.
- Engineered LLM-powered reporting (22 files, 26 report types) using Gemini and OpenAI: context injection, tone modulation, structured output parsing, ThreadPoolExecutor parallelism, checkpoint/resume via Parquet.
- Built BigQuery data warehouse with 15+ source tables, timezone-aware ETL, and a multi-source hours reconciliation system unifying 4 external APIs (Upwork GraphQL, 7Shifts, Island, WhenIWork) into a single source of truth; managed GCP IAM (service accounts, roles) for pipeline resources.
- Developed team metrics engine with scikit-learn Isolation Forest anomaly detection, rolling KPIs, and Looker Studio dashboards feeding executive-level visibility.

Asia-Pacific Team Lead

Jul 2021 – Oct 2022

Duolingo, Remote (Zagreb, Croatia)

- Led a cross-functional team of 19 across APAC: hiring, performance management, executive reporting. Promoted from Senior Quality Control Specialist within 4 months.

Founder & Director, Američki Centar

2017 – 2023

Zagreb, Croatia

- Founded and ran an English-language school in Zagreb (curriculum, staff, finance, partnerships) alongside my Duolingo career. Earlier: School Coordinator, Američki Institut (2013–2017); IT Project Coordinator, Hickory Cardiology Associates, US healthcare IT (2010–2013), safeguarding regulated patient health data across 7 clinical sites.

SELECTED PROJECTS

Founder & Full-Stack Engineer

2026 – Present

Petica, Live Croatian EdTech SaaS | petica.app

- Built production SaaS solo: 92 API endpoints, 44 PostgreSQL tables, Next.js 16 / React / TypeScript frontend with 110+ components, multi-tenancy via Row-Level Security.
- Implemented multi-provider LLM abstraction (Gemini, Claude, OpenAI) with AES-256-GCM encrypted key management, vision-based auto-grading of handwritten student work, and pgvector caching of generated quiz images.
- Shipped Stripe billing with 4 tiers, tier-based feature gating (soft and hard gates), and a 3-stage automated cron pipeline (Sync, AI Summaries, Parent Notifications).

- Optimized infrastructure to under €50/month in total cloud cost (Vercel, Supabase, Stripe, Resend) while supporting bilingual delivery (1,030+ translation keys) and production reliability.

Full-Stack Engineer

2026 – Present

Sitnice Bitnice, Bilingual recipe & content platform | sitnicebitnice.com

- Architected Payload CMS 3 + Next.js 15 platform on Vercel/Supabase; migrated entire legacy WordPress site via custom WXR parser handling PHP-serialized WPRM recipe metadata; multi-layer caching (ISR, on-demand revalidatePath, unstable_cache, Vercel Cron warmup).
- Built S3 media pipeline with Croatian diacritic transliteration, Schema.org Recipe JSON-LD for SEO, anonymous SHA-256-hashed IP rating, and infinite-scroll search via Next.js Server Actions.

EDUCATION

M.S. Data Science, Eastern University (GPA 4.0)

Mar 2023 – Oct 2024

B.S. Political Science, The Citadel (Military College of South Carolina)

2003 – 2007

CERTIFICATIONS & LANGUAGES

Certifications: IBM Python for Data Science · Google Data Analytics · W3Cx Front-End Web Developer.

Languages: English (native), Croatian (B1), Spanish (A2)