Owen Richards

SOFTWARE ENGINEER · FULL-STACK & AI

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SUMMARY

Software engineer building full-stack products and production AI systems at CoStar Group: React / TypeScript frontends, C# / .NET and event-driven AWS backends, and LLM agents with retrieval-augmented generation (RAG) on AWS Bedrock. Rebuilt the AI platform backend around declarative agents and built pipelines for the $1B Homes.com launch; promoted twice in three years. Pursuing an M.S. in Computer Science (Machine Learning) at Georgia Tech.

SKILLS

Frontend	React, Next.js, TypeScript, JavaScript, TanStack, Tailwind, shadcn/ui, D3.js, micro-frontends
AI	LangGraph, AWS Bedrock (Claude), retrieval-augmented generation (RAG), hybrid retrieval (kNN + BM25), vector search, PyTorch
Backend	C#, .NET, Python, Node.js, Express, tRPC, GraphQL, REST, Kafka, AWS SQS, microservices
Data	SQL Server / T-SQL, PostgreSQL / PostGIS, Snowflake, DynamoDB, Redis, OpenSearch, pgvector, Drizzle ORM
Cloud / Ops	AWS (Lambda, ECS, S3, API Gateway, IAM), Docker, Helm, Terraform, GitHub Actions, Azure DevOps, Datadog

EXPERIENCE

CoStar Group · Richmond, VA (Hybrid) JUL 2023 – PRESENT

Software Engineer II · Software Engineer I · Associate Software Engineer

Platforms reaching millions of contacts daily across 7+ marketplaces

- Re-architected the CoStar AI Platform backend (Python) around JSON agent definitions compiled into LangGraph StateGraphs: new agents ship faster, on 75% less code (27.7K → 7.0K lines).
- Shipped React / TypeScript features end to end: campaign, audience-builder and automation UIs, multi-language support, and lead reconciliation in the revenue dashboard.
- Built retrieval-augmented generation (RAG) agents on AWS Bedrock (Claude) with kNN + BM25 hybrid retrieval across 26 production OpenSearch indices and DynamoDB-backed conversation state.
- Built event-driven enrollment pipelines (Lambda, API Gateway, SQS, Kafka) for the $1B Homes.com initiative and migrated demo-request campaigns from Pardot to Salesforce Marketing Cloud.
- Designed reusable workflow actions for the marketing-automation platform (C#, .NET, SQL Server, Snowflake), cutting each new campaign capability from a multi-week custom integration to ~1 day.
- Architected field-level CoStar Sync Kafka subscriptions projected to cut downstream writes 80–90%, with replay, backfill and idempotent consumers.
- Cut cloud and database overhead: removed unused AWS services (Terraform), retired SQL procedures replaced by OpenSearch, and sped up a high-traffic stored procedure.

nCino · DevOps Software Engineer Intern · Wilmington, NC MAY 2022 – SEP 2022

- Built continuous integration and delivery (CI/CD) pipelines and infrastructure-as-code for 30+ product teams (AWS, GitHub Actions); custom Datadog Lambda metrics cut cloud spend ~$100K a year.
- Launched a centralized developer hub in the build pipeline and rolled out Bandit security scanning across the organization.

University of Virginia · Machine Learning Research Assistant · Charlottesville, VA AUG 2021 – MAY 2023

- Built deep-learning pipelines and the patient-survey UI for an NIH-funded patient-outcome platform (with Emory and Harvard); tuned GPU data parallelism.

University of Virginia · Teaching Assistant · Head TA, Database Systems 2022–23 AUG 2021 – MAY 2023

- Supported 100+ students and deployed 10+ class projects on Google Cloud.

PROJECTS

FieldDay · Founder & sole engineer · owenlrichards.com/fieldday OCT 2025 – PRESENT

- Pre-launch platform putting people, households, organizations and sponsors on one participation graph: Next.js 16 web, React Native mobile, Bun + Express + tRPC API.
- Nx monorepo of 13 backend domains and 14 frontend packages with CI-enforced isolation; domains talk only via an event bus and transactional outbox, typed end to end with tRPC + Zod.
- Append-only Stripe payments ledger, backend-enforced youth safety and COPPA consent, and pgvector HNSW hybrid search with reciprocal-rank fusion on PostgreSQL 18 + PostGIS.

EDUCATION

Georgia Institute of Technology · M.S. Computer Science (Machine Learning) AUG 2024 – PRESENT

University of Virginia · B.S. Computer Science, Engineering Business minor · GPA 3.92 AUG 2019 – MAY 2023