Cariad Eccleston

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SUMMARY

I'm a senior software engineer with more than 20 years' experience. At digiLab I design and build Python backends, AWS infrastructure as code, security, and CI/CD for the *Uncertainty Engine*, a SaaS machine learning platform for safety-critical sectors like fusion energy.

WORK EXPERIENCE

January 2025 - Present

Senior Software Engineer

digiLab Solutions Ltd, Exeter, United Kingdom

- I designed the platform's architecture for over 50 SQS-driven workers and FastAPI services running as Docker containers on ECS Fargate, each with an IAM role and security group scoped tightly to its work.
- I proposed an architectural change that made our workers' load balancers unnecessary, then removed them from over 200 deployments without downtime, and built scale-to-zero autoscaling, which cut AWS costs by about a quarter in 2 months.
- I built the AWS CDK application that launched production and deploys every customer environment, and cut provisioning from days to hours. I prototyped it in hand-written CloudFormation to verify the design, and colleagues provision from my documentation.
- I implemented controls such as CloudWatch monitoring, S3 access logs, and VPC flow logs for the SOC 2 audit that digiLab passed, which got us through a nuclear energy customer's procurement. I tracked compliance in Sprinto, and tested my disaster recovery runbook by deleting my own data in production and restoring it all from AWS Backup in under an hour.
- I wrote the proposal for our single sign-on service, then designed and built it in Python. It uses Cognito for OAuth 2.0 and OpenID Connect with PKCE, and keeps refresh tokens server-side. It runs behind a WAF in non-root containers with all Linux capabilities dropped.
- I replaced the prototype's long-lived CI access keys with a least-privilege IAM role per kind of job, assumed by GitHub Actions via OIDC. When GitHub changed its subject claims, I added our organisation's immutable ID to the trust policies rather than a wider wildcard.
- Over 70 of our repositories use the composite GitHub Actions I built in Bash for CI/CD, including ones that push Docker images to ECR and authenticate Poetry to CodeArtifact.
- I built our deployment pipeline and designed each release as a fixed set of immutable images, so production receives only what we tested in UAT. I run our UAT and production deployments.
- I wrote the framework that the engineering team uses to test every AI worker's non-deterministic outputs, by asserting the expected shape and values within a tolerance. I traced intermittent test failures to parallel processes racing on our SDK's token cache, and fixed the SDK to write its cache atomically, which stopped the failures.
- I cut developers' wait to test a change against real workflows from up to an hour to seconds by proposing and building a Bash script, with supporting infrastructure, that starts AI workers locally and registers them in cloud environments. I teach it in workshops, so most forward-deployed engineers now build experimental workers without help.

July 2019 - January 2025

Contract Software Engineer

Self-employed, Remote, United Kingdom

May 2005 - July 2019

Senior Software Engineer

Thomson Reuters Tax & Accounting, Exmouth, Devon, United Kingdom

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EDUCATION

Month YYYY - Month YYYY

Qualification

Institution

CERTIFICATIONS

Certification, Issuer, Month YYYY