# COPELAND ROYALL

copeyroyall@mac.com copey.dev

## SKILLS

**Languages** TypeScript, Go, Python, JavaScript
**Software** GCP, AWS, Kubernetes, Linux, Terraform, Pulumi, Node.js, GitHub Actions, Flux CD, Grafana, Git

## EXPERIENCE

**Visa** September 2023 – May 2024
*Graduate Software Engineer*
Developed infrastructure as code for payment industry product rollout in Europe, automating deployments and establishing development practices.

- Implemented TypeScript Pulumi IaC package to repeatably deploy 256 Pulumi resources across 4 Google Cloud (GCP) projects, meeting Payment Card Industry compliance, reducing deployment time and automating manual steps; also wrote packages for managing GKE, IAM and KMS resources
- Developed Pulumi packages with unit testing using Mocha and Chai and created multi-language SDKs enabling package use in TypeScript, Go and Python projects depending on requirements
- Deployed Cloudability granular FinOps monitoring in 45 GCP projects, recommending 10% cost savings
- Installed and updated Kubernetes cluster addons using Argo CD, Kustomize and Helm
- Migrated Concourse CI pipelines to new load-test platform

**Visa** Summer 2022
*DevOps Engineering Intern*
Accelerated adoption of AWS by developing foundational Terraform packages and development processes.

- Developed Terraform modules for AWS Aurora and ElastiCache Redis for standardized multi-team use
- Created Terraform Enterprise and tfsec (security analysis) development workflow using Docker and WSL

**Tangible AI** Summer 2021
*Natural Language Processing Intern*
Contributed Python ML-driven positivity-ranking news reader feature to open-source chatbot.

- Generated training data using Facebook and web scrapers for news article text and post reactions
- Trained TFIDF vectorizer and multi-output ridge regression model for positivity prediction, achieving a significant $R^2$ (model fit) score of 0.61, and an end classifier model for personalized recommendations

## EDUCATION

**University of Edinburgh** 2019 – 2023
BSc Computer Science, First-class honors (GPA: 4.0)
Dissertation:

- Scalable multi-receiver ADS-B aircraft tracking data aggregation system
- Written in Go, utilizing Apache Kafka, MongoDB and GraphQL
- Achieved 10ms end-to-end latency

## PERSONAL PROJECTS

**Aircraft Tracking for iOS Siri** (github.com)
Developed program to locate and calculate closest aircraft using globe-compensated distances and achieved over 18,500 downloads from public GitHub Container Registry.

- Implemented Go service to empower Siri using ADS-B tracking data and data augmentation
- Used GitHub Actions for multi-arch Docker image build, ensuring maximum compatibility with end users
- Deployed on home server using Kubernetes, Ubuntu, Flux CD, Prometheus, Grafana and Cloudflare

**Microcontroller server monitoring** (github.com)
Created monitoring solution for low-power microcontroller to enable cost-effective server health checks.

- Developed MicroPython firmware utilizing concurrency through cooperative multitasking (asyncio) and refactored dependencies for simultaneous checking
- Implemented watchdog timer for fault tolerance; dynamic CPU frequency scaling for lower power consumption; email status notifications for ICMP, HTTP and DNS checks; web UI with latency graphs

## INTERESTS

Long distance bike touring, mountain biking, camping, aviation, guitar