

# Anastasia Coffman

Knoxville, TN • anastasiacoffman7@gmail.com • acoffman.dev

## SUMMARY

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Software engineer with hands-on experience designing and operating production-grade infrastructure across AWS, Kubernetes, and self-hosted environments. Builds end-to-end systems — from CI/CD pipelines and container orchestration to async video processing pipelines and vector search APIs. Focused on reliability, automation, and systems that solve real problems.

## EXPERIENCE

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### Software Engineer | Brookmimir LLC

2024 – Present

- Architected and deployed a video processing pipeline (Quartzite) using Python, FastAPI, Celery, and Redis; integrated parallel detection algorithms for face recognition, object detection, and OCR.
- Managed AWS infrastructure across EKS, EC2, Lambda, S3, SES, and IAM; provisioned and maintained GitLab runners on EKS via Helm.
- Built and maintained a self-hosted GitLab instance (gitlab.brookmimir.com) on AWS EC2 with S3 object storage, container registry, and Let's Encrypt TLS.
- Implemented PostgreSQL and FAISS-backed vector search for pipeline query APIs, supporting semantic retrieval over processed media.
- Authored GitLab CI/CD pipelines with S3-backed caching, reducing build times and enforcing automated security and quality checks.
- Explored infrastructure-as-code tooling (OpenTofu) and used Former2 to export existing AWS resources for reproducibility.
- Contributed software tooling in support of anti-human trafficking initiatives.

### Programming Lead | BC Robotics — FRC Team 4504

2022 – 2026

- Led software design and implementation for a nationally competitive robotics team using Java; built autonomous pathing and swerve drive systems.
- Established reproducible development workflows and authored documentation to support sustainable knowledge transfer across team generations.
- Mentored junior programmers in systems design, version control, and applied robotics engineering.

## PROJECTS

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### Quartzite | Video Intelligence Pipeline

2024 – Present

- Async Python/FastAPI service processing video streams through modular detection workers (face, object, OCR) using Celery + Redis for task distribution.
- Integrated PostgreSQL for metadata indexing and FAISS for vector similarity search; designed REST query API for downstream consumers.
- Deployed and iterated on AWS EKS with GitLab CI for continuous delivery.

### Home Network & Self-Hosted Infrastructure | Brookmimir

2023 – Present

- Runs OPNsense firewall/router with Tailscale overlay network; configured Pi-hole + Unbound as a full recursive DNS resolver (no upstream reliance).
- Operates Caddy reverse proxy and multiple self-hosted services; wardriving setup with Kismet on Kali/Raspberry Pi for wireless survey data.
- Uses NixOS/Nix on macOS for reproducible dev environments across machines.

## FastAPI SMS Survey Platform | Brookmimir

2024

- Built a FastAPI + Twilio + MongoDB application for SMS-based field survey reporting, used in data collection workflows.

## TECHNICAL SKILLS

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**Languages:** Python, JavaScript/TypeScript (Bun), SQL, Bash, HTML/CSS

**Infrastructure & Cloud:** AWS (EKS, EC2, Lambda, S3, SES, IAM), Docker, Kubernetes, Helm, OpenTofu

**Frameworks & Tools:** FastAPI, Celery, Redis, Elasticsearch, FAISS, GitLab CI/CD, Tailscale, Caddy, NixOS

**Data & ML:** OpenCV, vector search (FAISS), Ollama (local LLM inference), Pydantic, Apache Spark / EMR, structured data extraction

**Networking:** OPNsense, Pi-hole, Unbound, Tailscale, Kismet, reverse proxying

## EDUCATION

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### Maryville High School

*Graduation: May 2026*

Weighted GPA: 4.47 • Top 25 in Class • National Merit Commended Scholar

UT Governor's School of Science and Engineering Scholar • National Honor Society