Alp Efe Karalar

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DevOps-oriented Computer Engineering graduate with hands-on experience in Linux systems, containerization (Docker), cloud platforms (AWS), and building automated deployment pipelines. Currently developing production-grade infrastructure.

Education

The Pennsylvania State University, BS in Computer Engineering **Graduation:** December 2024

Dean's List: FA20, SP21, FA21, SU23 **Awards:** Defne-Muhtar Kent Scholarship

Relevant Coursework: OS Design, Communication Networks, Computer Architecture, Data Structures & Algorithms

Skills

Infrastructure & DevOps: Docker, AWS (EC2, cost optimization), Google Cloud Platform, Linux, Bash, CI/CD pipelines, Automated Deployment, Infrastructure as Code

Languages & Tools: Python, C/C++, JavaScript, Java, SQL, React, FastAPI, PostgreSQL, Git, Embedded Systems

Experience

CEO & Founder, Cydonia Technologies – State College, PA – *CydoniaTech.org* May 2025 - Current

- Building Linux-based embedded systems with automated deployment pipelines and remote update infrastructure
- Implementing real-time kernel optimizations achieving sub-5ms latency on production hardware
- Developing complete CI/CD ecosystem for manufacturing, distribution, and continuous deployment
- Architecting scalable infrastructure supporting monitoring, logging, and automated rollback capabilities
- Configured JACK audio subsystem with systemd services and automated startup scripts for embedded Linux

Head of Machine Learning, DementiAnalytics – State College, PA February 2025 - Current

- Managing ML model deployment pipelines ensuring reliable delivery of AI services while maintaining system performance
- Leading infrastructure initiatives for scalable processing of audio/text data using containerized microservices
- Collaborating with cross-functional teams to integrate solutions, providing clear technical documentation

Software Engineer, Advanced Vehicle Team – University Park, PA January 2024 – December 2024

- Deployed real-time computer vision system on embedded Linux platform, optimizing for 50% increased accuracy
- Achieved 3rd place in Auto Drive Challenge II (GM & SAE International) through reliable system architecture

Software Engineer Co-op, Bakkal Co. – Pleasanton, CA July 2023 – October 2023

- Enhanced React Native applications through Agile SCRUM, implementing automated testing workflows

Projects

ResearchTLDR.xyz - Full-Stack Research Platform **Stack:** Docker, FastAPI, PostgreSQL, React

- Deployed containerized full-stack application with React frontend, FastAPI backend, and PostgreSQL database
- Implemented automated deployment pipeline with multi-provider LLM integration and asynchronous processing
- Engineered scalable infrastructure supporting concurrent users with proper error handling and monitoring

Personal Infrastructure & Home Lab **Stack:** Linux, Bash, OpenVPN, Automation

- Maintain custom Arch Linux environment with 15+ Bash scripts automating system monitoring and management
- Configured self-hosted OpenVPN server on Debian workstation enabling secure remote GPU compute access
- Implemented automated backup strategies using rsync and cron jobs for disaster recovery to cloud storage

Cloud Infrastructure & Cost Optimization **Stack:** AWS EC2, Cloud Infrastructure

- Deployed and maintained production websites on AWS EC2 with security groups and SSH configurations
- Implemented cost optimization strategies, reducing infrastructure expenses through strategic migration
- Utilized Google Cloud Platform for multiple hackathon projects, demonstrating multi-cloud proficiency

Large-Scale Data Processing Pipeline (Music Generation RNN) **Stack:** Python, Data Pipeline, Caching

- Built data pipeline processing 7M+ records from 1200+ files with custom caching and memory optimization
- Implemented efficient batch processing system reducing memory footprint by 60% for ML training workloads

Advanced Systems Infrastructure Simulator **Stack:** C, Linux, Systems Programming

- Built high-performance 5-stage systems simulator with efficient disk I/O and optimized cache layer
- Implemented bit-level operations and network protocol handling for distributed system communication