

AZAR ADHAM

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PROFESSIONAL SUMMARY

Cloud & AI Engineer specializing in Serverless Architecture and Computer Vision. Proven track record of deploying production-grade systems on AWS.

Authoring EGO-Optimizer a metaheuristic algorithm where entropy dynamically balances exploration vs exploitation.

Expert in building event-driven observability pipelines, RAG-based AI agents, and secure IoT intrusion detection systems. Dedicated to bridging the gap between high-level algorithms and physical hardware solutions.

TECHNICAL SKILLS

- Cloud & DevOps: AWS (Lambda, DynamoDB, SNS, EventBridge, CloudFront, OIDC), GitHub Actions (CI/CD), Docker, Linux (Systemd/Bash).
- AI & Computer Vision: RAG, LangChain, FAISS, Gemini API, YOLOv8, ResNet, ConvLSTM, Random Forest, TRCC Clustering.
- Languages: Python (Advanced: Boto3, FastAPI, Scikit-Learn), C++, SQL (NoSQL/MongoDB).

OPEN SOURCE ENGINEERING

EGO-Optimizer (PyPi Package)

[🔗 View on PyPi](#)

- Published Author: Created and maintained **ego-optimizer**, a Python library for Entropy-Guided Optimization, available via `pip install ego-optimizer`.
- Algorithm Design: Engineered a novel meta-heuristic that utilizes Shannon Entropy as a feedback signal to dynamically adjust mutation rates, preventing premature convergence in high-dimensional non-convex landscapes.
- Performance: Benchmarked against standard optimizers (PSO, Differential Evolution), demonstrating superior stability on complex test functions (e.g., Rastrigin, Ackley).
- Release Management: Managed the full CI/CD release cycle, including automated testing, packaging (Wheel/Source), and versioning for the Python Package Index.

PROFESSIONAL EXPERIENCE

Serverless AIOps Sentinel (AWS & GenAI)

AWS Lambda, DynamoDB, Gemini

- Architected an Event-Driven Observability Agent using AWS Lambda to monitor global infrastructure health (CloudFront, API Gateway) in real-time.
- Automated Root Cause Analysis (RCA) by integrating Gemini 1.5 directly into the incident response pipeline to generate fix suggestions before alerting via SNS.
- Optimized State Management using DynamoDB to handle alert cooldowns and deduplication, preventing alarm fatigue.

"AdhamAI" – RAG-Based Portfolio Assistant

FastAPI, LangChain, FAISS

- Developed a RAG Microservice using FastAPI and LangChain, enabling context-aware vector search over professional documentation.
- Built Analytics Middleware: Engineered an admin dashboard endpoint that logs recruiter interactions and resolves IP addresses to company names using external APIs.
- Secured Deployment: Hosted on Render with a segregated frontend/backend architecture and optimized vector retrieval for sub-second latency.

- Developed a Hybrid IDS using Random Forest and TRCC Clustering to detect CAN bus injection attacks (DoS, Fuzzing) on the OCS Lab Car-Hacking Dataset.
- Engineered Temporal Features: Calculated `Time_Diff` between sequential packets and `CAN_ID_Frequency` to identify flooding attacks that evade standard signature detection.
- Achieved 100% Precision on DoS attack vectors by analyzing payload entropy, successfully filtering out high-frequency noise from normal vehicle operations.

PROJECT EXPERIENCE (CONTINUED)

Spatiotemporal Video Segmentation Network

TensorFlow, ResNet50, ConvLSTM

- Designed a Novel Architecture combining ResNet50 (spatial) and ConvLSTM (temporal) to perform pixel-level segmentation on dynamic video sequences.
- Implemented CBAM Attention: Engineered custom Attention Modules to force the model to focus on moving objects, significantly improving mask accuracy on the DAVIS 2017 dataset.
- Optimized Training: Utilized custom Dice Loss functions to handle class imbalance between foreground objects and background scenery.

DevSecOps & CI/CD Pipeline Architecture

GitHub Actions, OIDC, S3

- Secured Automated Deployments using GitHub Actions with OIDC, eliminating long-lived AWS access keys.
- Automated Content Delivery workflows that trigger CloudFront cache invalidations immediately post-deployment, ensuring global consistency.
- Infrastructure as Code (IaC): Managed AWS resource configurations to ensure reproducible production environments.

EDUCATION

Bachelor of Science in Computer Engineering

Duzce University, Turkey

Specialization: Artificial Intelligence & Embedded Systems

2021 – 2025

- Relevant Coursework: Neural Networks, Cloud Computing, Embedded Systems, Advanced Algorithm Design.
- GPA: 3.11 / 4.00

CERTIFICATIONS & LANGUAGES

- Certifications: MATLAB Deep Learning, Machine Learning, & Image Processing Onramp (MathWorks).
- Languages: Arabic (Native), English (Fluent).