Mahmoud Zaky Fetoh

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Objective

I am a Software Engineer with 3 years of experience in software engineering, passionate about solving real-world problems and collaborating with great engineers from whom I can learn.
I have diverse experience across various disciplines, including backend development, MLOps, computer vision research, and DevOps.

Work Experience

Dec 2023 - Present

ML Cloud Consultant @ **Bexprt**, UK.
Involved at architecting and implementing MLOps and DevOps projects for MENA customers.

- *Job Role*:
◦ Architecting scalable training and serving pipelines for ML models.
◦ Managing AWS Cloud infrastructure across 7 AWS accounts for ML and Data teams.
◦ Architecting cloud-native solutions and developing Infrastructure as Code (IaC) for them.
◦ Designing solutions for large-scale data processing.
◦ Creating and executing large-scale migration plans.
◦ Designing, developing, and maintaining scalable and reliable CI/CD pipelines.
◦ Managing and maintaining compute clusters in AWS (ECS and EKS).
◦ Conducting rigorous comparisons of 3rd-party tools, selecting and integrating them into the infrastructure.
◦ Managing the monitoring solution and create tailored alerts.
◦ Continuously creating and updating documentation.

- *Technologies*:
Clould Provider: AWS, Cloudflare.
IaC: Terraform, SAM, Serverless-Framework.
CI/CD: Github Actions, Atlantis, Terraform Cloud.
ETL: AWS Glue Crawler, Glue Database, Glue Job, S3, Firehose.
MLOps: SageMaker, bentoml, Prefect, MLflow, DVC.
Micro-frontend: Cloudfront, S3, Route53.
Container Orchestrators: ECS, EKS.
Monitoring: DataDog, NewRelic.

May 2023 - Dec 2023

DevOps Engineer @ **n-go**, KSA.
Administrating the infrastucture for 1M user Application.

- *Job Role*:
◦ Administering and monitoring a microservices application with 1 million users running on a Kubernetes (Amazon EKS) cluster.
◦ Administering and maintaining Jenkins CI pipelines for performing Dockerization and image scanning.
◦ Developing Infrastructure as Code (IaC) using Terraform, Kustomize, and Helm, ensuring all follow the GitOps pattern.
◦ Developing custom and secure automation solutions to increase developer productivity.
◦ Administering and maintaining GitOps CD pipelines for Kubernetes using ArgoCD.
◦ Continuously enhancing the infrastructure and performing necessary migrations.
◦ Writing and creating Prometheus dashboards using PromQL for Kubernetes.
◦ Ensuring security by implementing security best practices.
◦ Administering RDS databases and MongoDB clusters.
◦ Administering Cloudflare DNS and other services.
◦ Administering Twingate ZTN solutions.

- *Technologies*:

Clould Provider: AWS, OCI, Cloudflare.
Container Orchestrators: EKS, OKE.
CI/CD: Jenkins, GitHub actions, ArgoCD.
kubernetes Autoscaler: Cluster Autoscaler, karpenter.
Monitoring: Prometheus, Grafana, Loki, ELK, Kiali, Jaeger.
IaC: Terraform, Kustomize, Helm, Ansible.
VPN & ZTN: Pritunl, Twingate.
Service Mesh: Istio.

Jan 2023 - Apr 2023

MLops Engineer @ **Susoft**, Norway.
Building microservice application for Training and deploying machine and deep learning models for Sales forecasting. Performing customer segmentation to direct marketing campaigns.

- *Job Role*:
◦ Creating a training and serving MLOps pipeline for multiple time series forecasting models, such as Prophet, Neural Prophet, and TFT.
◦ Developing custom data pipelines for extracting, loading, and transforming required data from MariaDB databases.
◦ Evaluating and monitoring model performance.
◦ Ensuring high availability of the serving models.

- *Technologies*:
Model Training: PyTorchForecasting, Pytorch, pandas, Prophet, NeuralProphet.
Model Monitoring: Weight and biases, Prometheus, Grafana.
Model Serving: torchScript, Docker, K8s.
Model Registry: Minio.
Asynchronous communication for issuing train request is done using RabbitMQ Gateway and load balancing services performed using NodeJS.

Jan 2022 - Jan 2023

Software Engineer @ **Freelancer**.
Bulding Microservices and monolithic applications.

- *Job Role*:
◦ Create complete RESTfull API, GraphQL Services following client requirements.
◦ Create documentation and Swagger documentation for it.
◦ Building scalable and decupled architectures.

- *Technologies*:
Programming Languages: Python, NodeJS.
HTTP Servers Frameworks: ExpressJS, Flask.
Authentication: Jsonwebtoken (JWT).
Client API: REST, GraphQL, SocketIO.
Others: jest, Joi, Mongoose, amqp, sequelize, Crypto, axios, Multer, Docker-Compose.

Jan 2021 - Jan 2022

Teaching & Research Assistant @ **Menoufiya University**, Egypt.
◦ Teaching courses on AI, deep learning, image processing, and computer vision.
◦ Teaching the CCNA curriculum, preparing exams, and evaluating students.
◦ Teaching the MCSA curriculum, preparing exams, and evaluating students.
◦ Teaching alorithms, data structure, Operating systems courses.
◦ Teaching backend programming using Node.js.

Education

2021 - 2023

Faculty of Computers and Information, Menoufia university, Egypt.
M.Sc. in Computer Vision, specialized in deep learning research, graduated in 2023.
◦ Architected Convolutional Neural Networks (CNNs) for detecting COVID-19 in medical images.
◦ Built training pipelines, validated model accuracy, and performed model comparison.
◦ Monitored experiments, documented results, and writing papers.

2015 - 2019 | **Faculty of Computers and Information, Menoufia university**, Egypt.
B.Sc. Honors. I graduated with highest grade on my class with an Excellent honors GPA of 3.6.
∘ Hired as a Teaching Assistant at the same institute.
∘ My graduation project created an intrusion detection system for detecting various network attacks in software-defined networks using deep learning CIC-IDS2017 is used a training dataset

Professional Certificates.
AWS Certified Solutions Architect - Associate [Link]
AWS Certified Machine Learning - Specialty [Link]

Frameworks & Technical Skills

Programming Languages:	Python, NodeJS, GoLang (learning)
HTTP Servers Frameworks:	ExpressJS, Flask.
Version Control Tools:	Git, Github, Bitbucket.
Data Science:	PyTorch, Pandas, statsmodels, Prophet, Numpy, OpenCV, Plotly, LLAMA 2, PaddleOCR.
MLOps:	SageMaker, Prefect, bentoml, Mlflow, Hydra, DVC.
Client API:	REST, GraphQL, gRPC, SocketIO.
Security Utilities:	Joi, Jsonwebtoken (JWT), OAuth 2.0.
Databases:	MONGODB, MySQL, PostgreSQL, MariaDB.
Adminstration:	CCNA, MCSA, RHCSA, Kubernetes,
Clould Provider:	AWS, OCI, Cloudflare.
Monitoring:	Prometheus, Grafana, Loki, ELK, kiali, jaeger, DataDog, NewRelic.
Container Orchestrators:	EKS, OKE, ECS, Docker-Compose.
Infrastucture as Code :	Terraform, Kustomize, Helm, Ansible.
CI/CD:	Atlantis, Terraform Cloud, Jenkins, Github Actions, ArgoCD.
VPN & ZTN:	Pritunl, Twingate, Cloudflare Warp.
Message Broker:	RabbitMQ, Kafka.
Documentation:	Swagger, LaTeX.
Caching:	Redis, MinIO.

Publications

2022 **Multiscale aware classification of COVID-19 from Chest X-Ray using a spatially weighted atrous spatial pyramid pooling CNN** [Link].
Mahmoud Z fetoh, Khalid M. Amin, Ahmed M. Hamad
In this paper I propose, scale invariant CNN architecture for COVID-19 classification. Proposed model based on building a scale space in each layer using Atrous spatial pyramid pooling then selecting a correct space to operate at using spatial attention module.

2021 **COVID-19 Detection Based on Chest X-Ray Image Classification using Tailored CNN Model**, [Link]. **Mahmoud Z fetoh**, Khalid M. Amin, Ahmed M. Hamad
In this paper I propose a very light-weight model as a consequence of using spatial separable kernel and depth-wise separable kernels for COVID-19 classification.
Published at: IJCI.