

# 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 Backend, Frontend, ML, and Data teams.
- Architecting cloud-native solutions and developing Infrastructure as Code (IaC) for them.
- Designing and implementing 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:*

**Cloud 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-frontent:** 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.

	<ul style="list-style-type: none"> <li>- <i>Technologies:</i></li> </ul> <p><b>Cloud Provider:</b> AWS, OCI, Cloudflare.  <b>Container Orchestrators:</b> EKS, OKE.  <b>CI/CD:</b> Jenkins, GitHub actions, ArgoCD.  <b>kubernetes Autoscaler:</b> Cluster Autoscaler, karpenter.  <b>Monitoring:</b> Prometheus, Grafana, Loki, ELK, Kiali, Jaeger.  <b>IaC:</b> Terraform, Kustomize, Helm, Ansible.  <b>VPN &amp; ZTN:</b> Pritunl, Twingate.  <b>Service Mesh:</b> Istio.</p>
Jan 2023 - Apr 2023	<p><b>MLops Engineer @ Susoft, Norway.</b>  Building microservice application for Training and deploying machine and deep learning models for Sales forecasting. Performing customer segmentation to direct marketing campaigns.</p> <ul style="list-style-type: none"> <li>- <i>Job Role:</i> <ul style="list-style-type: none"> <li>o Creating a training and serving MLOps pipeline for multiple time series forecasting models, such as Prophet, Neural Prophet, and TFT.</li> <li>o Developing custom data pipelines for extracting, loading, and transforming required data from MariaDB databases.</li> <li>o Evaluating and monitoring model performance.</li> <li>o Ensuring high availability of the serving models.</li> </ul> </li> <li>- <i>Technologies:</i> <p><b>Model Training:</b> PyTorchForecasting, Pytorch, pandas, Prophet, NeuralProphet.  <b>Model Monitoring:</b> Weight and biases, Prometheus, Grafana.  <b>Model Serving:</b> torchScript, Docker, K8s.  <b>Model Registry:</b> Minio.</p> <p>Asynchronous communication for issuing train request is done using RabbitMQ  Gateway and load balancing services performed using NodeJS.</p> </li> </ul>
Jan 2022 - Jan 2023	<p><b>Software Engineer @ Freelancer.</b>  Building Microservices and monolithic applications.</p> <ul style="list-style-type: none"> <li>- <i>Job Role:</i> <ul style="list-style-type: none"> <li>o Create complete RESTfull API, GraphQL Services following client requirements.</li> <li>o Create documentation and Swagger documentation for it.</li> <li>o Building scalable and decupled architectures.</li> </ul> </li> <li>- <i>Technologies:</i> <p><b>Programming Languages:</b> Python, NodeJS.  <b>HTTP Servers Frameworks:</b> ExpressJS, Flask.  <b>Authentication:</b> Jsonwebtoken (JWT).  <b>Client API:</b> REST, GraphQL, SocketIO.  <b>Others:</b> jest, Joi, Mongoose, amqp, sequelize, Crypto, axios, Multer, Docker-Compose.</p> </li> </ul>
Jan 2021 - Jan 2023	<p><b>Teaching &amp; Research Assistant @ Menoufiya University, Egypt.</b></p> <ul style="list-style-type: none"> <li>o Teaching courses on AI, deep learning, image processing, and computer vision.</li> <li>o Teaching the CCNA curriculum, preparing exams, and evaluating students.</li> <li>o Teaching the MCSA curriculum, preparing exams, and evaluating students.</li> <li>o Teaching alorithms, data structure, Operating systems courses.</li> <li>o Teaching backend programming using Node.js.</li> </ul>

## Education

2021 - 2023	<p><b>Faculty of Computers and Information, Menoufia university, Egypt.</b>  <b>M.Sc.</b> in Computer Vision, specialized in deep learning research, graduated in 2023.</p> <ul style="list-style-type: none"> <li>o Architected Convolutional Neural Networks (CNNs) for detecting COVID-19 in medical images.</li> <li>o Built training pipelines, validated model accuracy, and performed model comparison.</li> <li>o Monitored experiments, documented results, and writing papers.</li> </ul>
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2015 - 2019	<p><b>Faculty of Computers and Information, Menoufia university, Egypt.</b></p> <p><b>B.Sc. Honors.</b> I graduated with highest grade on my class with an Excellent honors GPA of 3.6.</p> <ul style="list-style-type: none"> <li>◦ Hired as a Teaching Assistant at the same institute.</li> <li>◦ 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</li> </ul> <p><b>Professional Certificates.</b></p> <p>AWS Certified Solutions Architect - Associate <a href="#">[Link]</a></p> <p>AWS Certified Machine Learning - Specialty <a href="#">[Link]</a></p>
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## Frameworks & Technical Skills

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

## Publications

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- 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.**