Mahmoud Zaky Fetoh

Phone: +201022381474
Email: zaky.fetoh@gmail.com
github.com/zaky-fetoh
linkedin.com/in/mahmoud-zaky-fetoh

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]

Publications

2022 **Multiscale aware classification of COVID-19 from Chest X-Ray using a spatially weighted atrous spatial pyramid pooling CNN** [Link] [github].
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] [github].
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.

Work Experience

Dec 2023 - Present | **ML Cloud Consultant @ Bexprt**, UK.
Involved at architecting and implementing MLOps and ML projects for MENA customers.

- *Job Role*:
- Architecting scalable training and serving pipelines for offline/online ML models.
- Managing AWS Cloud infrastructure across 7 AWS accounts for Backend, Frontend, ML, and Data teams.
- Architecting serverless cloud-native solutions and developing Infrastructure as Code (IaC) for it.
- Designing and implementing solutions for large-scale data processing and migration.
- Creating and executing large-scale migration plans i.e) Moving from ECS to EKS.
- 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.
Jan 2021 - present	**Teaching & Research Assistant** @ **Menoufiya University**, Egypt. ◦ Teaching courses on AI, deep learning, image processing, and computer vision. ◦ Teaching alorithms, data structure, Operating systems courses.
Jan 2023 - Apr 2023	**ML 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*: ◦ Validating if the problem can be resolved with AI or not ◦ selecting the most accurate model. reproduce machine learning papers ◦ Creating a training and serving ML 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.

Frameworks & Technical Skills

Programming Languages:	Python, NodeJS, Bash
HTTP Servers Frameworks:	ExpressJS, Flask.
MLOps:	SageMaker, Prefect, bentoml, Mlflow, Hydra, DVC.
Data Science:	PyTorch, Pandas, statsmodels, Prophet, Numpy, OpenCV, Plotly,
Monitoring:	Prometheus, Grafana, Loki, ELK, kiali, jaeger, DataDog, NewRelic.
Infrastucture as Code:	Terraform, Kustomize, Helm, Ansible.
Container Orchestrators:	EKS, OKE, ECS, Docker-Compose.
Cloud Provider:	AWS, OCI, Cloudflare.
Documentation:	Swagger, LaTeX.

Project Experience

2021 **MNIST latent space exploration**, [Link].
Projecting the MNIST database to 2D using Convolutional ConvAutoEncoder and SSIM using as loss function and calculating the entroy of the resultant space.

- *tools used:* OpenCV, Pytorch, Numpy.

2021 **Simple Stitching**, [Link].

simple stitching project which use SIFT as Keypoint for detecting and describtion then use RANSAC for Estimating the Homography and distance transform for Blending Simple project for image stitching
- *tools used:* OpenCV, Numpy.

2021 **MNIST Bayesian ConvAutoEncoder**, [Link].
Implementing Bayesian ConvAutoEncoder trained using MNIST data set
- *tools used:* OpenCV, Pytorch, Numpy.

2021 **SPP-Net Multiscale Classification of Voc dataset**, [Link].
implementaion of SPP-net paper using PyTorch. In this project a mutliscale and multilabel classifier is trained and evaluated Using Voc pascal dataset.
- *tools used:* OpenCV, Pytorch, Numpy.

2021 **Implemeting data preparation of RCNN paper**, [Link].
Implementing data preparation of Region-based Convolutional Neural Networks (R-CNN) paper
- *tools used:* OpenCV, Pytorch, Numpy.