Mahmoud Zaky Fetoh

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Objective

Aspiring PhD Student with a strong foundation in SDN, SRv6, Computer Vision and Deep Learning. Passionate about advancing the convergence of networking and AI technologies to enhance network automation, performance, and scalability. Seeking to contribute to cutting-edge research in SDN and network programmability while exploring the integration of AI-driven methodologies, particularly deep learning, for innovative solutions in networking challenges.

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.
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.

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.