MAHRUKH KHALIL

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Graduate with a degree in Computer Systems Engineering with extensive experience and strong educational background. I always strive to achieve the highest possible standard whatever the situation may be. Seeking to leverage solid skills in Research, development, AI, Machine Learning, Data science, Computer vision, Data Analysis, Deep Learning, NLP, and Image Processing for achieving personal and company-oriented goals. Isaac is customized to work in a challenging and fast-paced environment with good communication skills and capability of explaining complex issue sin easy-to-understand terms.

RESEARCH PAPER

Title: Modification of Improved YOLO-v3

In the world of detection and classification, You Only Look Once (YOLO)-v3 has been maintaining its position as the best classifier and detector and is due to its fastness, accuracy, less complex structure, continuous modifications, and improvements, etc. Several approaches have been proposed in this paper to modify improved YOLO-v3. Our main contributions are (1) increasing the number of anchor boxes; (2) replacement of K-means clustering with density-based spatial clustering of applications with noise (DBSCAN); (3) introducing final bounding box alignment (FBBA) technique; and (4) replacement of multi-scaling with a depth calculation algorithm. At first, we increased the number of anchor boxes from 9 to 11 which resulted in a higher performance of 6% for both visual object classes and common objects in context datasets, where increment in computational cost was negligible.
Link of paper that is publicly available is attached here. (MIYOLO: Modification of Improved YOLO-v3)

EDUCATION

Degree / Certificate	CGPA / %	Board / Institute	Location	Year
MS Data Science	3.94 CGPA	NUST (SEECS) ISLAMABAD	ISLAMABAD	2019-2022
BSc (Hon's) Computer System Engineering	3.71 CGPA	THE ISLAMIA UNIVERSITY OF BAHAWALPUR	BAHAWALPUR	2015-2019
Higher Secondary School Certificate	80%	GOVERNMENT COLLEGE FOR WOMEN, DERA GHAZI KHAN	DG Khan	2013-2015
Secondary School Certificate	79%	GOVERNMENT GIRLS HIGH SCHOOL, DERA GHAZI KHAN	DG Khan	2011-2013

EXPERIENCE

- **PHD Visiting Student Internship** (1st December,2022 to 1st March,2023)
  TUM-Germany (3 months) complete assigned project related to UAV's localization.
- **Machine Learning Engineer** (26th April,2021 to 18th November,2022)
  Revolve AI– Islamabad (1.5 Year) Developing AI, Deep Learning, Machine Learning and Vision based products. Building and training different models etc.
- **Freelancer** (15th May,2019 to 6th March,2021)
  Fiverr – Online (2 Years) Providing Data Science, Machine Learning, AI, Deep Learning, Computer Vision and other Computer Science related programming and development services etc.

PROGRAMMING LANGUAGES

- (Python, R, Data Structures, C++, OOP)
- MATLAB
- (HTML, CSS, PHP)

SKILLS

- Teamwork
- Ability to Work Under Pressure
- Good Research Skills
- Good communication Skills
- Adaptability
- Microsoft Office (Word, Excel, PowerPoint)
- Proficient Computer and Internet Skills etc.

TOOLS & FRAMEWORKS

- MATLAB
- Anaconda
- PyCharm
- Android Studio
- GitHub
- TensorFlow
- PyTorch
- Dev (C++)
- Visual Studio
- Google Earth API, QGIS
- Docker
- GCP
- API's

COMPETITION

Kaggle Competition (Question Answering)

PROJECTS

MS Thesis

Creating a real time localization system by using deep learning computer vision technology in which we use pre-stored geo-referenced imagery for Unmanned Aerial Vehicle (UAV) localization. (Currently Working)

BS FYP

Internet of Things (IOT) based smart home automation system that comprises of complete automation of lights, fans, temperature control, and door security, etc.

Image Captioning by Using Deep Learning Model

Image captioning is an extremely convoluted and evolving topic, which converges the attention of two different fields (computer vision and natural language processing) at some common point. We built architecture that generates captions using only convolution neural network. We also concatenate the attention layer with each odd number of layers send produce caption sentences.

Speckle Noise Reduction in Underwater

In this group project, a deep convolution neural network-based method has been used to directly estimate and correctly reduce the speckle noise and restore the image quality from the latent sharp image.

Panorama Generation

Image stitching to produce perfect panoramic images captured from a mobile device and different cameras is the most challenging topic of computer vision. To produce quality panorama by stitching whole 360 view of world is a promising objective. State of the art methods perform stitching only on five to six images whereas models that stitch more than 7 images do not give better quality panorama as well as response time. Our main objective is to stitch multiple images that cover the whole 360 view of the world with better quality as well as less time. We achieve this objective by removing the ghosting and alignment errors to produce the perfect panoramic images of real time scenes and by improving each step of stitching without using any complex methodology.

Semantic Segmentation on panorama Images

To apply semantic segmentation on panorama images that are very large in horizontal direction and contain only indoor objects.

Mini Projects

- ✓ Severity of Road accident prediction
- ✓ Classification of Fashion MNIST Data (NN&CNN)
- ✓ Instant search system
- ✓ Face recognition system with neural networks
- ✓ Finger spelling recognition system
- ✓ POS Estimation
- ✓ Classification of CFAR-10 images (NN&CNN)
- ✓ Sentiment Analysis
- ✓ Crude Oil Forecasting
- ✓ Extract Text from business card images
- ✓ Conversion of R and SAS into python
- ✓ Pose Estimation
- ✓ Indoor Navigation system