

Personal Info

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Profile Summary

Have a mixed experience between conducting pure academic research and contributing to international products in the industry. My research interest is Computer Vision, especially designing accurate, lightweight, and memory-efficient architectures for edge devices. Seeking a research or software internship related to the field of Computer Vision/AI during my Ph.D. journey.

Education

MBZUAI	Ph.D. in Computer Vision - CGPA is 3.95/4.00 (A).	08/2021 – Present
Ain-shams University	Master degree in Computer Sciences - Master Courses (2017 / 2018). - CGPA is 3.71/4.00 (A-).	03/2018 – 08/2020
Ain-shams University	Bachelor degree in Computer Sciences - Excellent with honors grade. - Rank: 1 st in Scientific Computing department from 149 students.	09/2012 – 08/2016

Work Experience

Valeo Egypt	Machine Learning / SW Engineer	11/2019 – 7/2021
Ain-shams University	Teaching / Lecturer Assistant	03/2018 – 7/2021
Valeo Egypt	Deep Learning Researcher Internship at CDV-R&D Excellence team	01/2019 – 04/2019
Mercedes Benz-GAS	Software Engineer	09/2016 – 01/2017
ABB	Software Engineer Internship	08/2016 – 09/2016

Selected Publications

- [*SwiftFormer: Efficient Additive Attention for Transformer-based Real-time Mobile Vision Applications*](#), Accepted in ICCV conference, 2023.
- [*UNETR++: Delving into Efficient and Accurate 3D Medical Image Segmentation*](#), Under Review.
- [*EdgeNeXt: Efficiently Amalgamated CNN-Transformer Architecture for Mobile Vision Applications*](#), Published in ECCV workshop (CADL 2022).

- [Generalization of Convolutional Neural Networks for ECG Classification Using Generative Adversarial Networks](#), Published in IEEE Access Journal, vol. 8, pp. 35592-35605, 2020.



Teaching History

- **Teaching courses:** Machine Learning, Deep Learning, and Computer Vision.
- Mentor in Kaggle competitions for deep learning projects at Ain Shams University.
- Supervisor for several Machine Learning & Computer Vision graduation projects.



Projects

- **XrayGPT:** Chest Radiographs Summarization using Medical Vision-Language Models. This project aims to stimulate research around automated analysis of chest radiographs based on the given x-ray [\[project\]](#).
- **Insta-YOLO:** A novel one-stage end-to-end DL model for real-time instance segmentation, the box regression of YOLOv3 is replaced by a polygon regression in the localization head in addition to proposing new localization loss. The model is 1.75x faster than YOLACT with comparable accuracy.
- **Seat Occupancy Detection:** Detect & classify the car seats in order to know how to open the airbag for more safety. I increased the Average Precision (AP) by 4.0% for different versions of YOLO and CenterNet by proposing a different data augmentation method that is based on mixing image normalization techniques.
- **Object Recognition using Radar:** Using TI radar sensors interior of the car, I introduced a prototype of classifying the objects from the heatmaps.
- **Occupancy Grid Mapping:** Autonomous driving requires detailed knowledge about the environment. A common approach to accomplish this task is to use occupancy grid maps (OGM). We built our own OGM based on LIDAR data. I reduced the time from 3.18 MS to 1.28 MS by updating only the polygon of the affected points instead of updating the whole convex hull.



Technical Skills

Languages: Python and C++.

Concepts: OOP, Data structures, Analysis and design algorithms, and agile methodologies.



Awards & Honor Certificates

- First place in Ibtiecar competition 2017 (Hold by the Egyptian Ministry of Communications)
 - Ibtiecar is a competition held every year for excellent graduation projects for all engineering and computer sciences colleges in Egypt. We had achieved first place in the Data Science track.
- Coursera certificate for completing the following specializations: -
 - TensorFlow in Practice specialization from deeplearning.ai
 - Deep Learning specialization from deeplearning.ai
 - Machine Learning specialization from the University of Washington
- Ranked in the top 5 among 640 students in the Algorithms and Operating System courses.



Academic Supervisor

- Prof. Dr. [Fahad Khan](mailto:fahad.khan@mbzuai.ac.ae) (fahad.khan@mbzuai.ac.ae)



Languages

- Arabic: Native or bilingual proficiency.
- English: Professional working proficiency.