ABDULMALIK ALDAWSARI

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PROFESSIONAL SUMMARY

I'm a data enthusiast with a focus on deep learning applications, especially in unconstrained outdoor environments. Skilled in computer vision and deep learning architectures in the perception field. Interested in solving problems related to segmentation, video understanding, and reasoning.

EDUCATION

- **King Saud bin Abdulaziz University for Health Science**
  Bachelor of Health Information System (3.73/5.0)

  Riyadh, Saudi Arabia
  (Nov 2013 – Jan 2017)

WORK EXPERIENCE

- **Sr. Data Analyst – (Research department) / ELM Company**

  Riyadh, Saudi Arabia
  (Oct 2019 – Current)

  Some of the projects that I have worked on are Car tailgating detection, ECG classification, Document verification, and Car damage assessment. My contributions are:
  - Data preparation and generation using 3D models and GAN-based approaches.
  - Model debugging, performance analysis, and improvement. Used tools: Grad-CAM, CAM.
  - Research papers implementation (Obj detection, segmentation) and customization, for instance, SWIN Transformer, Yolact, SipMask, FixMatch, and CopyPast augmentation.
  - Writing research papers, and benchmark analysis.
  - Presenting the latest work and updates at international/local conferences.
  - Used technologies: Python, C++, and ROS.

- **Web Developer / Saudi Telecom Company**

  Riyadh, Saudi Arabia
  (Mar 2018 – Sep 2019)

  - Revamping the company's internal apps from JAVA language to WebMethods.
  - Reports generation using complex SQL queries about the company/employees' performance.
  - Used technologies: Java EE, SQL, HTML, and JS.

- **Chief Technology Officer (Co-founder) / Qaren (Qaren.sa)**

  Riyadh, Saudi Arabia
  (Jan 2019 – May 2019)

  - Our solution predicts an optimized set of supermarkets near each customer that has the required items at the cheapest prices. It reduced the avg of families' grocery costs by 30%. My contributions are:
  - Data scraping of supermarket locations and item prices from google and supermarkets' websites.
  - I built an ML model using the K-Mean clustering to find areas with a high number of supermarkets in hexagonal regions (The design selection was based on findings from Uber Company).
  - Used technologies: Python (Selenium, Scikit learn) and HTML.

- **Business Analyst / Dr. Sulaiman AL Habib Hospital (Cloud Solutions)**

  Riyadh, Saudi Arabia
  (Jun 2017 – Fab 2018)

  - I was part of the first team across Saudi Arabia to implement a health information system for public hospitals in collaboration with the General Electric company.

PUBLICATIONS & PATENTS

- Method and Apparatus of Authenticating Documents Having Embedded Landmarks. **(Filled 2021)** [Patent]

- Automotive Parts Assessment: Applying Real-time Instance-Segmentation Models to Identify Vehicle Parts. (*First author*, accepted in "**Complexity Journal.**" 2022) [PAPER]

SELECTED PROJECTS

- **ELM Company - Car damage assessment (Ongoing):**
- A project I'm fully managing and working on to automate the car damage appraisal using deep learning models. I was in charge of the project design, including the DL architecture. We collected datasets from different countries, including Europe and the US, to ensure the model's generalization. As for the modeling part, I fine-tuned multiple SoTA DL models, both CNN and Transformer based. I also designed a loss function (Weighted multi-cross entropy) to handle the model sensitivity toward segmentation artifacts.
  Currently, I'm exploring Yolov7 and Mask2former models to improve the performance, in addition to writing a pipeline for object tracking in videos using MedianFlow.
- **ELM Company - License Plate Detection / 2020 March:**
- A solo project for LP detection in unconstrained scenes using a purely CV based approach utilizing the Hough Line algorithm, and custom modification.
- Published on Medium blog: https://medium.com/@abdulmalik0x
- **Data Science Bootcamp at General Assembly - Vehicle Tailgating Detection / 2019 May:**
- Utilizing **Frustum PointNets for 3D Object Detection from RGB-D Data** paper, I added a post-processing block to detect car tailgating violations by calculating the distance between the 3D bbox of each car, then, calculating the rotation angle (yaw angle) of each car for lane estimation. I extended the project, at the ELM company, to improve the model against generalization issues for Saudi Arabia's roads. Also, I used ROS for LiDAR data visualization.

CERTIFICATES & SKILLS

- Modeling and Optimization for Machine Learning from MIT professional education (On-campus) | 2022
- Self-Driving Car Nanodegree from Udacity | 2022 – Ongoing
- Deep Learning Nanodegree from Udacity | 2019
- Data Science Bootcamp from General Assembly, 3 Months, Full time (Best graduation project) | 2019
- Full Stack Web Developer Nanodegree from Udacity | 2018
- Entry Certificate in Business Analysis™ (ECBA®) | 2018
- Semi-finals of MIT Enterprise Forum Startup Competition, Saudi Arabia chapter (Top 27 teams out of 2200) | 2017

Programming Languages: Java, Python, C++, HTML, CSS.
Libraries, toolkits: PyTorch, TensorFlow, OpenCV, CUDA, LINUX
Languages: Arabic (Native), English: (Fluent)

VOLUNTEERING & TALKS

- **TALK:** Speaker at PyData conference (Khobar chapter)
  Architecture selection & optimization for DL models (in Arabic)

  Saudi Arabia - Online
  (Feb 2021)

  Explanation about quantization techniques using OpenVINO from Intel for CPU usage, and customization of the YOLO-v3's backbone from Darknet-53 to MobileNet for edge usage. The demo was on the license plate detection project.

- **Volunteer:** Web developer at Saudi American Association of Special Education.

  Saudi Arabia
  (Aug 2018 – 2018 Nov)