

ANAS AL-LAHHAM

☎ (+971) 585288240 | ✉ anas.allaham97@outlook.com | 🏠 anasemad11.github.io/ | 🌐 AnasEmad11

EDUCATION

Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI)

Aug. 2021 - May 2023

MASTERS OF SCIENCE IN COMPUTER VISION

UAE

- **GPA:** 3.68/4.0
- **Major courses:** Human and Computer Vision, Visual Object Recognition and Detection, Geometry for Computer Vision, Digital Twins.
- **Thesis:** "Pseudo-Label Generation and Refinement for Minimally Supervised Video Anomaly Detection"

King Saud University (KSU)

Sept. 2015 - May 2020

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

Saudi Arabia

- **GPA:** 4.79/5.0
- **Ranked 1st among students graduated in my major**
- **Thesis:** "Sky-Imager Based Forecast of Solar Irradiance Using Machine Learning"

PUBLICATIONS

- K. Abutalip*, **A. Al-lahham***, and A. E. Saddik, "Digital Twin of Atmospheric Environment: Sensory Data Fusion for High-Resolution PM2.5 Estimation and Action Policies Recommendation". *IEEE Access*, (2023).
- **A. Al-lahham**, O. Theeb, K. Elalem, T. Alshaw, and S. Alshebeili, "Sky imager-based forecast of solar irradiance using machine learning". *Electronics*, 9(10), (2020).
- "From coarse to fine-grained pseudo labels: A fully unsupervised video anomaly detection framework". *BMVC* (**Under Review**).

RESEARCH INTERESTS

Computer Vision (Anomaly Detection), Signal and image processing, Renewable Energy.

PROJECTS

Minimally Supervised Video Anomaly Detection

Aug. 2022 - Present

- We propose a novel anomaly detection framework that is independent of the video length
- We propose a new technique for creating and refining feature-level pseudo-labels using weak supervision
- We extend the pseudo-labeling method to completely eradicate the need of having training labels (**Under review**)
- The proposed architecture is aimed to be transferable to different applications mainly **Automated Monitoring of Photovoltaic Plants**.

Automated Monitoring of Photovoltaic Plants using Aerial Videos

Dec. 2021 - Present

- The overall goal is to develop algorithms that enable automated monitoring or inspection of solar photovoltaic (PV) plants based on aerial videos captured using drones/unmanned aerial vehicles (UAV).
- The initial use case will focus on quantifying the amount of soiling deposited on the PV panels and estimate the corresponding PV power loss (PVPL).
- The proposed system will be robust to diverse operating conditions.

Sensory Data Fusion for High-Resolution PM_{2.5} Estimation and Action Policies Recommendation*

Feb. 2022 - Sep. 2022

- The project aims to build a digital twin (DT) of an atmospheric environment by fusing remote sensing and observational data
- Estimated values of PM_{2.5} obtained from an ensemble model are used to provide recommendations for decreasing the agglomeration levels.
- Published an academic journal paper regarding the proposed project (**Published: 12 January 2023**).

Machine Learning-Based MPPT Control under Partial Shading Condition

Nov. 2020 - Feb. 2021

- The project aims to develop an ML-based maximum power point tracker (MPPT) technique for photovoltaics (PV) under partial shading (PS) condition.
- The proposed method is simulated in MATLAB/Simulink for feasibility analysis.

Sky-Imager Based Forecast of Solar Irradiance Using Machine Learning

Sept. 2019 - Oct. 2020

- This project presents a new computationally efficient machine learning algorithms for forecasting the solar irradiance for durations from 1 hour up to 4 hours using sky images.
- Compared to state-of-the-art computationally heavy algorithms, our approach achieves competitive results with much less computational complexity for both nowcasting and forecasting up to 4 hours ahead of time.
- Published an academic journal paper regarding the proposed approach (**Published: 16 October 2020**).

EXPERIENCE

MBZUAI

Jul. 2023 - Present

RESEARCH ASSISTANT

UAE

Projects: 1) Automated Monitoring of Photovoltaic Plants using Aerial Videos 2) Minimally Supervised Video Anomaly Detection

MBZUAI

Aug. 2022 - Dec 2022

TEACHING ASSISTANT FOR MATHEMATICAL FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

UAE

YOUSSEF MARROUN CONT.CO (YMCO)

Jun. 2019 - Aug. 2019

ELECTRICAL PROJECT ENGINEER

Saudi Arabia

- **Internship** at YMCO on DALLAH hospital west expansion project. Worked with the electrical engineering team on reviewing and verifying different electrical systems layouts using AutoCAD, such as power, lighting, structure cable.

TECHNICAL STRENGTHS

Software & Tools	MATLAB, AutoCAD
Languages	Python (Intermediate), C++ (Basic)
Frameworks	PyTorch, OPENCV, Tensorflow

ACADEMIC ACHIEVEMENTS

*Top 3 Teams in NASA Airathon competition: Predict Air Quality	2022
Nominated for best graduation project competition in the university	2020
King Saud University Distinguished and Talented Students Program Student Member	2015