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Maaz Jamshaid

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ABOUT ME

I am currently serving as an Imagery Design Engineer at the Pakistan Air Force, where I am working in object detection and tracking using various gimbals and IR imagery, integrating deep learning algorithms, and enhancing gimbal systems with computer vision.

My previous role as an Avionics Engineer at Sysverve Aerospace involved developing AI-based UAV systems for autonomous target tracking and implementing classical image processing techniques on embedded systems. I have hands-on experience with various flight controllers and Mission Planner software and a robust background in both theoretical and practical aspects of Avionics and Machine Learning

WORK EXPERIENCE

11/2023 – CURRENT Peshawar , Pakistan

IMAGE PROCESSING ENGINEER PAKISTAN AIR FORCE

Object Detection and Tracking in IR Imagery

- Border surveillance system that detects and tracks threats using Gimbals
- Using state of the art deep learning based detection and tracking algorithms for detecting and tracking threats
- Integrating detection and tracking system with a serial communication commands controlled Gimbals

Integration of OpenCV trackers in Gimbals for object tracking and following

- Integrating computer vision into gimbals for precise target tracking.
- Developing socket programming for communication between the UAV (drone) and the Ground Control Station (GCS).
- Stream video data from the drone to the GCS for real-time monitoring.
- Ensure smooth and responsive tracking during flight operations.

01/06/2022 – 01/12/2023 Rawalpindi, Pakistan

AVIONICS ENGINEER SYSVERVE AEROSPACE PRIVATE LIMITED

Designed, developed, and implemented an AI-based UAV system for autonomous target tracking and following.

Target Tracking using Classical Image Processing (UAVs)

- Target tracking using classical image processing techniques and kalman filtering
- Deployment on embedded systems in UAVs

On-Board Object Search and Track System

- Implementation and deployment on Raspberry Pi, NVIDIA Jetson based hardware
- Gimbal control using PWM/serial signal

Other responsibilities

- Verify that avionics systems (including electrical components) are in good condition and meet safety standards.
- Skilled in configuring and operating a variety of flight controllers, such as Cube Black, Cube Orange, Pixhawk 6C, and V5+.
- Proficient in using Mission Planner software for mission planning and execution.
- Adept at integrating avionics systems into drones.

06/09/2021 – 17/09/2021 KAMRA, Pakistan

AVIONICS INTERN PAKISTAN AERONAUTICAL COMPLEX

- Worked with various engineering teams and was given an overview of different avionics systems, their importance, and how they work.
- Learned about Radar Warning System (RWS), Radar Warning Receiver (RWR), Identification b/w Friend & Foe (IFF) system, Griffo Radar, KlJ-07 Radar, Active Electronically Scanned Array (AESA) Radar.

EDUCATION AND TRAINING

17/09/2018 – 17/09/2022 Islamabad, Pakistan

BSC AVIONICS ENGINEERING Institute of Space Technology

Website https://ist.edu.pk

01/08/2016 – 01/08/2018 Rawalpindi, Pakistan

A-LEVELS Benchmark College

Website https://benchmark.edu.pk

01/08/2015 – 01/08/2016 Rawalpindi, Pakistan

O-LEVELS Saint Mary's Academy

Website https://sma.edu.pk/about-2/

LANGUAGE SKILLS

Mother tongue(s): **URDU**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C1	C1	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Python | MATLAB & SIMULINK | Javascript | Fusion 360 | Solidworks | HTML & CSS | GitHub | Microsoft Office

PROJECTS

Final Year Project

- Image encryption and decryption using MATLAB.
- Carried out Image Processing tasks such as image segmentation, shuffling (Diffusion) and pixel substitution (Confusion).
- S-box generation using Logistic Chaotic Map for randomness.
- Analyzed strength of encryption scheme using security tests.
- Carried out security analysis such as differential (NPCR), mean square, correlation coefficient, histogram, key sensitivity, key space and time analysis.
- Able to produce uniformly-distributed histogram for the ciphertext image.
- Literature review and research work on Physical and Application layer security.

Link https://github.com/maazjamshaid123/MyProjects/blob/main/Design of Lightweight Image Encryption Scheme for Secure Communication for UAVs.pptx

COURSES

AERIAL ROBOTICS

Link https://www.coursera.org/account/accomplishments/records/3X7FYGR4PWRN

SUPERVISED MACHINE LEARNING: REGRESSION AND CLASSIFICATION

Link https://www.coursera.org/account/accomplishments/records/DLGNS4CNAM7Y

ADVANCED LEARNING ALGORITHMS

Link https://www.coursera.org/account/accomplishments/records/HJKTURGQ4BQ8

PROGRAMMING FOR EVERYBODY (GETTING STARTED WITH PYTHON)

Link https://www.coursera.org/account/accomplishments/records/SHY6LQMJQ2YX

INTRODUCTION TO PROGRAMMING WITH MATLAB

Link https://www.coursera.org/account/accomplishments/records/4MC8TB57DLUP

DATA-DRIVEN ASTRONOMY

Link https://ocw.mit.edu