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Maaz Jamshaid

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WORK EXPERIENCE

11/2023 – CURRENT Peshawar , Pakistan

AI DESIGN OFFICER PAKISTAN AIR FORCE

Object Detection and Tracking in IR Imagery
- Border surveillance system that detects and tracks threats using IR camera
- Optimizing 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 Pan-Tilt Unit
- Background and birds rejection

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
- Target recognition using contour extraction, change detection and Kalman Filter
- Deployment on embedded systems in UAVs

On-Board Object Search and Track System in EO Imagery
- Object search using template matching algorithm
- Object tracking upon positive matching
- Implementation and deployment on NVIDIA Jetson based hardware
- Gimbal control using PWM/serial signal

360° Panorama Border Surveillance System in IR Imagery
- 360° panorama generation
- Images alignment using geometrical distortion and transformation
- Integration of 360° rotating Pan-Tilt Unit with panorama image
- Threat detection in the panoramic image

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