Abdullah Tahir

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OBJECTIVE

To contribute to the design, integration, and optimization of advanced aerospace and avionics systems by leveraging expertise in model-based system design (MBD), predictive maintenance using AI/ML, sensor integration, and RF/DSP engineering. Passionate about developing reliable, safety critical systems through system level architecture, ICD development, simulation and validation, and hardware-software integration to drive innovation in flight control, communication, and predictive health monitoring technologies.

EDUCATION

Institute of Space Technology
Islamabad, BS
BS-Avionics Engineering 1st August 2025
Final Year Project: Predictive Analysis of Avionics System Health using Modern Approaches of Artificial Intelligence
Relevant Coursework: Analog and Digital Communication, Signal and Systems, Radar Systems, Computer Programming, Avionics System Design, Electronics, Control Systems.

ICB G-6/3 Islamabad, Federal
Fsc. Pre-Engineering 2021

IMCB F-7/3 Islamabad, Federal
Matriculation 2019

PROJECTS

FYP-Predictive Analysis of Avionics System Health Using AI:

- Built a predictive maintenance framework using SVM and LSTM models with GUI integration to classify degraded components and estimate RUL using linear and exponential degradation models.

Cabin Pressurization Control System of ATR 42-500:

- Modeled a closed-loop pressurization system in Simulink with redundancy and safety logic, aligned with real aircraft pressurization architecture and functionality to detect abnormal operation.

Engine Monitoring and Alerting System:

- Designed a fault detection and alerting architecture for avionics subsystems, enabling real-time sensor-based anomaly detection.

Autopilot & Turbulence Simulation with FlightGear:

- Developed and integrated an aircraft autopilot model in Simulink with FlightGear incorporating turbulence effects, pressure modelling and flight instrument integration.

Real-Time Aircraft Tracking via ADS-B and SDR:

- Developed a tracking system using SDR hardware and Simulink to extract, process, and visualize aircraft positions from live ADS-B signals.

Patch Antenna Design and Analysis:

- Designed, simulated, and optimized a microstrip patch antenna using CST Studio Suite for desired resonant frequency and gain performance.

Ultrasonic Radar System for Object Detection:

- Implemented a PIC16F877A-based radar with sensor interfacing and PC visualization to detect and map surrounding objects.

Levitating Arm Copter Control:

- Designed and implemented a PID-based control system in simulation and Arduino hardware for stable levitation of a mechanical arm.

IR Remote Control Tester:

- Built a functional IR signal testing unit to decode and verify IR communication protocols and signal integrity.

Signal Processing with Filtration and Amplification:

- Developed analog signal conditioning circuits including zero-level detection, low-pass filtering, and amplification for noise reduction.

FPGA Digital Alarm Clock:

- Designed and implemented a digital alarm clock using coding (VHDL/Verilog) in Xilinx Vivado for timing and alarm functions.

Snake Game (Python):

- Built an interactive game implementing OOP concepts, structured logic flow, and real-time user interaction handling.

Interceptor Missile Simulation:

- Simulated missile trajectory and control systems using Simulink for defense application modeling.

Facial Expression Recognition in Python:

- Applied image-based emotion recognition using machine learning.

IQ Data Processing and Analysis:

- Extracted, processed, and analyzed IQ radar signal data using Python and MATLAB, applying FFT, power computation, and range estimation at 2.4 GHz to evaluate signal characteristics and propagation performance.

SKILLS

Technical: MATLAB, Simulink, CST, LabVIEW, NEC, Multisim, C, Python, Arduino IDE, PCB Design (Proteus), MS Office, LTspice, PSpice, Dataset Engineering, Sequential Modelling.
Language: English, Urdu
Laboratory: Oscilloscope operation, Soldering, Signal Generator, Spectrum Analyzer

EXPERIENCE

National Aerospace Science and Technology Park (NASTP) Rawalpindi, Punjab
Internship July 2024 – September 2024 (6 weeks)