Aqib Habib

aqibhabib1@live.com +923322768755 Portfolio

EDUCATION

National University of Sciences and Technology, Islamabad, Pakistan — SEPT 2018 - JUNE 2022
Bachelor of Mechanical Engineering with a Minor in Computer Science
Major CGPA: 3.79/4.0, Minor CGPA: 3.88/4.0

National University of Sciences and Technology, Islamabad, Pakistan — SEPT 2023 - CURRENT
Master of Science in Robotics and Intelligent Machine Engineering

WORK EXPERIENCE

Turkish Aerospace Industries **(Structural Design Engineer)** — JAN 2023 - CURRENT

- Developing assemblies, mechanisms and parts for scaled **5th gen fighter aircraft demonstrator UAV**
- Prototyping of enclosures, parts and mechanisms using **FDM 3-D printing**
- Designing, testing and manufacturing of **rigs and mockups**

Facility of Advanced Research and Integrated Systems **(Assistant Manager Mechanical)** — SEPT 2022 - DEC 2022

- Researched, analyzed and manufactured **concept tilt-wing eVTOL UAVs**
- Designed, tested and analyzed mounts, actuators, and mechanisms
- Manufactured using aluminium, **CFRP, GFRP and FDM 3D Printing**

Dawlance Arçelik **(R&D Intern)** — JULY 2022 - AUGUST 2022

- Designed and modelled domestic cooling loads and AC systems in **MATLAB/Simscape**
- Tested and analyzed split AC products in the HVAC Lab

National Engineering Scientific Commission **(R&D Intern)**

- Researched on **eVTOL UAVs** and **flight control systems**
- Designed a **tilt-rotor eVTOL UAV** — JULY 2021 - SEPT 2021

CO-CURRICULAR ACTIVTIES

IMechE UAS Challenge Pakistan **(Technical Lead)** — MARCH 2021 - JULY 2023

- Constructed technical and design criteria and rulebook for the participants
- Supervised and judged **flights and designs** of participants

SAE Baja Student Competition **(Team Captain)** — JULY 2019 - JUNE 2022

- Designed, analyzed and manufactured off-road Baja Buggy
- Achieved **4th Position** in business presentations all over the world
- Created the first team from Pakistan to compete in the competition

IMechE Chapter NUST **(Technical Executive)** — JULY 2019 - OCTOBER 2020

- Designed competition arenas for design challenges
- Programmed **Arduino** for the competition arenas

SKILLS

Programming

- **MATLAB/Simulink/Simscape** for mathematical models
- **Python** and **objected-oriented programming**
- **ROS 2**

Mechanical Skills

- FDM 3D printing and laser cutting for rapid prototyping of parts
- Carbon fibre wet layup for composite parts
- CNC manufacturing of steel/aluminum parts

Analysis

- ANSYS Mechanical for FEA Analysis
- Topology optimization in ANSYS

Computer-Aided Design

- SolidWorks, and CATIA V5, used on various projects involving GD&T, Sheet Metal Design and Surface Modelling
- AutoCAD and SolidWorks were used to draft 2D engineering drawings as per ASME Y14.5 2007

CERTIFICATIONS

Modern Robotics: Mechanics, Planning, and Control Specialization
Aerial Robotics Specialization
Control Design, MATLAB and Simulink
Python Specialization
Industrial Automation with Hydraulics and Pneumatics
Introduction to Finite Element Analysis

HONORS AND AWARDS

75th Celebration of Independence Day of Pakistan Scholarship Program

- Achieved acceptance from **Imperial College London** and the **University of Toronto**

Rector's Gold Medal

- Awarded for best undergraduate project

University High Achiever's Gold Medal and Certificate

- Awarded for Positions in Student Competitions

3rd Position at ASME Speed CAD Challenge
3rd position at ASME Team CAD Competition

PROJECTS

Hybrid eVTOL UAV System [VIDEO] [PDF] [PROJECT]

- Performed parametric analysis in **MATLAB** and **Simulink**
- Designed, analyzed, and manufactured **CFRP eVTOL UAV**
- Implemented **control systems** using Pixhawk 5x
- Achieved **Rector's Gold Medal** for best undergraduate project

Tilt-Wing eVTOL UAV [VIDEO]

- Researched, analyzed and manufactured concept **tilt-wing eVTOL UAVs**
- Designed, tested and analyzed mounts, actuators, and mechanisms
- Manufactured using aluminium, CFRP, GFRP and FDM 3D Printing

3-D Control and Trajectory Planning of Quadcopter

- Designed **PID controller** for 6 DOF quadcopter in MATLAB
- Designed **minimum-snap trajectory** way point navigation in MATLAB

Control of Active Suspension [PDF] [CODE]

- Constructed a mathematical model of the active suspension in **MATLAB/Simulink**
- Compared the results with passive suspension under different road profiles

Vehicle Traction Control [PDF] [CODE]

- Constructed a detailed mathematical model of vehicle and traction control in **MATLAB/Simscape**
- Controlled the desired road slip ratio for traction control

Twin Rotor MISO System

- Designed a **complimentary filter** by integrating gyro and accelerometer
- Designed and implemented a **PID pitch controller**
- Tested and validated the results on the test bench