7405903950
15 Stewart St. Athens OH 45701 E-mail: bhussain2009@my.fit.edu

BILAL HUSSAIN

Education

PhD Mechanical Engineering (In Progress)
Ohio University, Athens, Ohio, USA

M.S. Mechanical Engineering (2012)
Florida Institute of Technology, Melbourne, Florida, USA
GPA 3.6/4.0

Bachelor of Science in Mechanical Engineering (2002)
University of Engineering and Technology, Peshawar, Pakistan

Skills

Programing Tool	Python (Data Science, (Numpy, Pandas, Matplotlib), Feature Extraction, and Scientific Calculations Like filtering the signal, High Pass Filter, Low Pass Filter, Fast Fourier Transforms etc.)
Software Packages	SQL, Kubernetes, Tableau
FEA Packages	ANSYS® (Static & Dynamic Analysis, Linear & Non-linear analysis) both for Metals & Composites, Abaqus®
CAD/CAM	Pro-E Wildfire® (Solid modeling, Surfacing, assembling, Drawing generation , Mechanism synthesis, BOM (bill of material), GD&T etc), SolidWorks.
Computational Tools	Matlab® (Scientific Calculations)
MS Office	Word, Excel, PowerPoint etc

Experience

From August 2021 to date

Ohio University

Research Associate/Data Engineer

My duties include data extraction from csv file and transforming data (Time/Frequency series analysis) and then plotting of data as 2D and 3D graph
I extracted the different features from Laser Acoustic Emission data (Complex Wave form), like number of counts, Absolute Energy, peak Amplitude, Duration, Average frequency, Rise time/angle, Counts to peak etc.
I used Pandas and Numpy libraries in Python and for plotting used Matplotlib Library

I used this data for damage detection in different materials like Aluminum, Nickel Alloys and Composite materials like Carbon reinforced polymer Composites and glass reinforced polymer composites.

Statistical Outlier analysis in Python using mahalanobis distance technique, regression technique etc in python.

Used clustering and regression machine learning techniques in python for damage detection on different parts of aircraft using above features from data.

From September 2020 to July 2021
Capital University of Science & Technology
Lecturer
Teaches subject of Statics, Dynamics, Mechanics of Materials I and Physics at undergraduate level.

From August 2016 to date
University of Lahore (Islamabad Campus)
Lecturer

- Teaches subject of Statics, Dynamics, Mechanics of Materials I, Mechanics of materials II, Machine Design-I, Machine Design-II and Mechanical Vibrations at undergraduate level.
- Supervising final year projects of mechanical engineering undergraduate students related to machine design, stress analysis (FEA analysis) and 3D CAD modeling (mechanical engineering).

From September 2017 to February 2018
International Islamic University Islamabad
Visiting Assistant Professor

- Teaching subjects of mechanics of materials, mechanical vibrations at undergraduate level

From June 2013 to August 2015
Sarhad University of Science & Information Technology
Lecturer

- Teaches subject of Mechanics of Materials I, Mechanics of materials II, Mechanical vibrations and Mechanics of Machines at undergraduate level.
- Supervising final year projects of mechanical engineering undergraduate students related to stress analysis (FEA analysis) and 3D CAD modeling (mechanical engineering).

From Jan 2011 to May 2012
Florida Institute of Technology
Teaching Assistant

- Served as teaching assistant for subjects of Mechanics of materials , Mechanical Vibrations, Machine Design, statics and dynamics.
- My duties were grading papers, quizzes and assignments. Also have office hours for guiding students in their assignments/homeworks.

From October 2002 - January 2011
Advance Engineering Research Organization (AERO)
Assistant Manager Design

2008-2011

- Finite element analysis (FEA) on structural components of UAV's such as wing, fuselage, vertical tail, location spar, bulkheads, canard, nose cone etc (both metals & composite materials) using ANSYS®

- Modal and transient analyses on structures using ANSYS®
- Linear and Non-Linear analysis on structural parts of UAV's. such as wing, fuselage, tail.
- 3D Modeling (solid modeling, surfacing) of different structural parts of UAV's (unmanned aerial vehicle) for example Fuselage, canard, location spars, bulkheads etc using Pro-Engineer Wildfire®
- Assembling of different components in assembly using Pro-Engineer Wildfire®
- Detail drawing generation of different mechanical components using Pro-Engineer Wildfire®.
- Finite element analysis on structural components using ANSYS workbench such as fuselage, wings, hook etc
- Material selection and testing using ASTM standards for both metals and composite specimens
- Determination of Mass moment of Inertia and C.G of different assemblies using Pro-E
- Four bar linkage Mechanism synthesis for moving control surfaces of wing and tail of UAV and their velocity and torque evaluation using Pro-Engineer Wildfire®

2002-2007

Production Manager

- Production manager for manufacturing of different products in the department such as UAV's, stabilized camera parts and cover, bullet proof jackets, bullet proof helmets and other parts using composite materials.
- I was involved in overall management of manufacturing of different products in department such as material planning, equipment needed, budgeting and costing for the project.
- Facilitate in project execution, monitor the progress of the project and provide the feedback to the management about progress of the project.
- Monitor inventory status and generate inventory reports to project director.
- Plan equipment, material and manpower requirements to meet the production schedule.
- Assist program management in coordinating and planning customer orders and deliveries.
- In coming material inspection against specified properties by supplier and the designer.
- Manufactured parts inspection against drawings and design data.
- Generate reports on production shortages to program management.
- Evaluate production control activities to ensure that final product meet the design (customer) specifications.
- Preparation of necessary documentation for manufacturing of different products in department such as process planning sheet, part list, family tree etc.
- Keeping record of inventory of materials and tools used i.e materials available in store, materials to be purchase for the project and tools needed.
- Develop process improvements for inventory, manufacturing and production control systems.
- Drawing reviews and solving issues with design department.
- Satisfying quality control department requirements against data pack in use.
- Solid Modeling and technical drawing generation of molds of different parts manufactured in department.

- Design and manufacturing of bullet proof helmets and jackets according to NIJ standards of level IIIA & level III.
- I was also in direct contact with customers regarding different features of product, its usage and customer feedback etc

.

Florida Institute of Technology Projects

- **Deformation of Bridge**; Deformations in bridge when hit by Missile (Transient & Modal analysis) made of steel, by using both Matlab and ANSYS 11.

- **Collision of Cars**; Occupant response to the rear end collision of cars using mathematical modeling
- **Gear analysis**; analysis of gears used in servos that how much load (torque & velocity) they can bear, made up of steel.
- **Motorcycle Fin**; Design of Motorcycle fin that come down to atmospheric temperature by conduction and convection using Matlab.
- **Combustion**; Calculating the adiabatic flame temperature and reaction completeness of different equivalence ratio of propane combustion using NASA CEA software and also determining the kinetics of propane combustion using quasi global mechanism.