



# JAMAL BHATTI

## CONTACT

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## SKILLS

**Matlab** 10+ yrs  
**Machine Learning** 5+ yrs  
**Python** 7+ yrs  
**C++** 6+ yrs  
**FEM, CFD** 6+ yrs  
**C#, VB.net** 3+ yrs  
**Ansys, Gambit, Abacus** 6+ yrs  
**LABview, ROS** 4+ yrs  
**SolidWorks, Creo** 5+ yrs  
**Linux** 4+ yrs  
**AWS, Docker, CI/CD** 2+ yrs

## EDUCATION



### Masters - Computational Methods in Engineering

Leibniz University of Hannover, Germany

**Thesis:** FEA Simulations of Multilayer Composite Membranes

**Focus:** FEM, Mathematics, and Machine Learning

Grade of Degree: **1.2 CGPA**

Oct 19 - Dec 23



### Bachelors - Aerospace Engineering

Institute of Space Technology, Islamabad, Pakistan

**Thesis:** Shape memory alloy simulations and applications in Aerospace

**Focus:** Aerodynamics, Controls, Structural, Propulsion, and Aerospace vehicle design

Grade of Degree: **1.9 CGPA**

Sep 09 - Sep 13

## WORK EXPERIENCE (9+YRS)



### Project Engineer

Dynamic modeling of unmanned aerial vehicles, design concepts, and software development

Apr 16 - Oct 19



### Design Engineer

Control and simulations of unmanned aerial vehicle.

Sep 13 - Apr 16



### Thesis and Internship

Airspring, Composites, RVE modeling, UMAT subroutine, scripting

May 23 - Dec 23



### Hilfswissenschaftler-Institut für Statik und Dynamik

Front-end software development for in-house code for the simulation of wind turbines

Feb 22 - Mar 23



### Hilfswissenschaftler-Institut für Angewandte Mathematik

Solving fracture mechanics problems by using machine learning

Sep 21 - Mar 23

# ACHIEVEMENTS

## Bachelor

### Aerospace Engineering

Top 4 students, secured scholarships for 5 semesters, straight A's in mathematics courses.

## Internship

### 503 Aviation Base

Digitized test bench for propeller aircraft, resolved a three-year technical issue.

## Bosch AI Talent Accelerator

### 100%

Completed the course two months ahead of schedule along with master's courses.

## Physics informed neural networks

### 100%

Developed custom codes to solve various PDEs.

# HOBBIES

## Table Tennis, Chess

## Cricket, and Cooking.

# LANGUAGES

## English - C1

## Urdu - Native

## German - A1



## Hilfswissenschaftler-Institut für Baumechanik und Numerische Mechanik

Taught the course Mechanics of Solids as a tutorial instructor

## IFW

## Hilfswissenschaftler-Institut für Fertigungstechnik und Werkzeugmaschinen

Developed an automatic algorithm for scanning wind turbine blades and predicting profiles using C# and Matlab Developed an automatic algorithm for scanning wind turbine blades and predicting profiles using C# and Matlab



## Hilfswissenschaftler-Institut für Produktentwicklung und Gerätebau

Worked on manufacturing highly transparent silicone materials using additive manufacturing methods

## IFW

## Hilfswissenschaftler-Institut für Fertigungstechnik und Werkzeugmaschinen

Tool path generation by using C#

# ADDITIONAL TRAINING



## Bosch AI Talent Accelerator - Data Engineer for AI applications

Udacity, Germany



## Clean coding with Python

Udacity



## Getting started with TensorFlow 2

Imperial College London, Coursera

# PROJECTS

## Convex Polygon Operations

## Boolean polygon operations using only standard template library

Tool: C++, Python

Code: <https://github.com/Jamal-dev/ConvexPolygonOps>

## Plugin for Abaqus

## A plugin to create periodic boundary condition on RVE

Tool: Python

Code: [https://github.com/Jamal-dev/PBC\\_Linear](https://github.com/Jamal-dev/PBC_Linear)

Oct 21 - Feb 22

Jan 21 - Dec 21

Nov 20 - Apr 21

Apr 20 - Jul 20

Aug 22 - Dec 22

Aug 22 - Dec 22

Jan 21 - Apr 21

2024

2023

<b>Material model parameter calibration tool</b> <b>Parameters for any custom hyper-elastic material model can be calibrated</b> Tool: Matlab Code: <a href="https://github.com/Jamal-dev/material_parameters_calibration">https://github.com/Jamal-dev/material_parameters_calibration</a>	2023
<b>Physics informed neural network</b> <b>Approximation of phase field problem, Poisson problem, wave equation, and Elasticity problem</b> Tool: Deal.II C++, Python	2022
<b>Splitter</b> <b>Learning Node Representations that Capture Multiple Social Contexts</b> Tool: Pytorch, GraphML, Python Code: <a href="https://github.com/Jamal-dev/Splitter">https://github.com/Jamal-dev/Splitter</a>	2022
<b>Fool Lime and SHAP</b> <b>Adversarial attacks on Post-Hoc explanation methods</b> Tool: Pytorch, Python Code: <a href="#">Link</a>	2022
<b>AWS data warehouse</b> <b>Built an ETL pipeline for data extraction from S3 and staging in Redshift using Python and AWS Redshift.</b> Tool: Python, AWS Redshift Code: <a href="https://github.com/Jamal-dev/cloud-data-warehouse">https://github.com/Jamal-dev/cloud-data-warehouse</a>	2022
<b>Data lakes with spark</b> <b>Created an ETL pipeline for data extraction, processing with PySpark, and loading data into S3 as dimensional tables.</b> Tool: Python, PySpark Code: <a href="https://github.com/Jamal-dev/spark-data-lakes">https://github.com/Jamal-dev/spark-data-lakes</a>	2022
<b>Message passing</b> <b>Developed the Uda Connect App for researcher interactions using Flask, SQLAlchemy, PostgreSQL, and more.</b> Tool: Flask, SQLAlchemy, PostgreSQL, PostGIS, Vagrant, K3s Code: <a href="https://github.com/Jamal-dev/message-passing">https://github.com/Jamal-dev/message-passing</a>	2022
<b>Cloud native CI/CD pipeline</b> <b>Implemented continuous integration and continuous development for the Techtrends application and launched it using Kubernetes.</b> Tool: Docker, PostgreSQL, Vagrant, K3s Code: <a href="https://github.com/Jamal-dev/techtrends">https://github.com/Jamal-dev/techtrends</a>	2022
<b>Simultaneous Localization and Mapping</b> <b>Tool: Python</b> Developed Python code for ICP, Bayesian Filter, Kalman Filter, Extended Kalman Filter, and particle filter.	2020
<b>Tethered Multi-copter</b> <b>Tool: PTC-Creo, Matlab</b> Conducted the theoretical design and sizing of a tethered multi-copter using PTC-Creo and Matlab.	2017

<b>Obstacle Problem Simulation</b> <b>Tool: Matlab</b>	2021
Developed Matlab code by using Primal-Dual scheme.	
<b>Isogeometric Analysis</b> <b>Tool: Matlab</b>	2021
Developed Matlab code for collocation/galerkin isogeometric method.	
<b>Database software for unmanned aerial vehicle</b> <b>Tool: VB.net</b>	2019
Collected data for UAVs, created a database, and developed a GUI in VB.net for accessing aircraft data.	
<b>Optimization of Contour of Fuselage at Transonic Regime</b> <b>Tool: Matlab, Fluent, Gambit</b>	2016
Optimized the fuselage shape for transonic regime than Von Karman shape.	
<b>Automation of test bench for piston engine using LABView through DAQ</b> <b>Tool: LABview</b>	2012
Digitized a helicopter piston engine testing bench using LABView and NI DAQ.	
<b>Experimental Testing Bench</b> <b>Tool: LABview, Matlab Simulink</b>	2013
Designed an experimental setup for real-time stress and strain measurements using LABView and Matlab Simulink.	
<b>Reverse Engineering</b> <b>Tool: Matlab, Geomagic</b>	2013
Designed parts by using tools like blue LED structured-light 3d scanner by transferring point cloud data into Geomagic, then did its prototyping by using 3d printers and re-scanned again parts to find a difference in CAD and real model	
<b>Conceptual design of UCAV (unmanned combat air vehicle)</b> <b>Tool: Matlab, Excel Macros, Datcom, AAA, RDS</b>	2015
The conceptual design was done by using almost all available data of UCAV's. Also done performance analysis, stability analysis, determined all stability derivatives using DATCOM and thereby used them to make simulation in Matlab and Flight Gear. And also worked in designing controllers of UAV	
<b>A real-time controller for 6-dof Stewart platform)</b> <b>Tool: Matlab, DAQ</b>	2012
Position control of a small-scale aircraft simulator using a DAQ	
<b>Deep Learning</b> <b>Tool: Python, Pytorch, TensorFlow</b>	2022
Working on optimal control for fracture mechanics problems. By using the power of deep learning reducing its computation power.	