

Gulzar Ali

+923105955186 | gulzarali05@gmail.com | [linkedin.com/in/G-Ali-engr](https://www.linkedin.com/in/G-Ali-engr) | github.com/gulzarali19

EDUCATION

National University of Sciences and Technology (NUST)

Islamabad, Pakistan

Master of Science in Computational Sciences and Engineering

Jan. 2023 – Present

- CGPA: 3.25
- **Electives:**
 - * Advanced Partial Differential Equations
 - * Applied Machine Learning
 - * CFD-I & CFD-II
- **Core Courses:**
 - * Computing for Computational Sciences and Engineering
 - * Computational Linear Algebra
 - * Applied Mathematics
 - * Data Analyses and Statistics

University of Engineering and Technology (UET)

Lahore, Pakistan

Bachelor of Science in Mechanical Engineering

Oct. 2018 – Aug. 2022

- **Electives:**
 - * Computational Fluid Dynamics
 - * Finite Element Analysis

EXPERIENCE

Tutor

Dec 2020 – Present

Remote Freelancer

- Teach and assist students with their Projects
- CFD Simulations on COMSOL and ANSYS
- FEA Methods and Linear Algebra

Parallel Computing Workshop Content Support

Jun. 2024 – Aug. 2024

NUST

Islamabad, Pakistan

- Develop ANSYS cases for Aerodynamics Simulations
- Develop parallel running codes for Convection Diffusion Equations in Python for testing
- Technical Support in Conducting Workshop

Mechanical Engineering Intern

Dec. 2022 – Jan. 2023

AJC Group of Companies

Lahore, Pakistan

- Fabrication, Maintenance, Quality Control, Project Planning

PROJECTS

Deep Learning-Enhanced CFD Approach in Data Centers | ANSYS, Python, Pytorch

May 2024 – Present

Master's Thesis, NUST

- Developed a 3D model of a data center and server racks for airflow simulation.
- Conducted CFD simulations to generate a dataset for training.
- Trained models on the generated dataset to predict hotspot temperatures within the racks.
- Developed an application to estimate temperature based on given parameters.

Simulation of Fluid Flow in Porous Media | COMSOL Multiphysics

Dec. 2017 – Aug. 2018

Bachelor's Thesis, UET

- Developed a 2D model of filter paper (porous medium) used in Time Temperature Indicators.
- Simulated the wicking process under Darcy's Law in porous media.
- Analyzed the flow rate for different shapes and compositions of porous media.

Simulation of 2D Advection-Diffusion Equation Using MPI in Python | *Python, MPI*

Parallel Computing Workshop 2024, DenseFusion

- Developed a 2D model of filter paper (porous medium) used in Time Temperature Indicators.
- Simulated water flow through the porous media via the wicking process under Darcy's Law.
- Analyzed the flow rate for different shapes and compositions of porous media.

Calculating Lift and Drag using Second Order Vortex Panel Method | *MATLAB*

Class Project, SINES

- Modeled the airfoil using mathematical equations and divided it into segments for computational analysis.
- Applied the Vortex Panel Method to compute lift and drag at various angles of attack, improving understanding of aerodynamic behavior.

Calculating Stress and Strain under Loading using Finite Element Analysis code | *MATLAB, ANSYS*

Class Project, SINES

- Writing the code for FEA analyses of 2D shape
- Calculated Stress and Strain by developing codes for shape function and stiffness matrix
- Visualizing the results and validating it with ANSYS

Multiphase Flow Modelling Across Y-shaped Micro-channels | *COMSOL*

Freelancing Project

- flow modelling under level set and laminar physics
- Parametric study to capture different flow regimes.
- visualizing the vortex generation in microchannel

TECHNICAL SKILLS

Languages: Python, C/C++

Software's and Operating Systems: ANSYS, COMSOL Multiphysics, Slack, OpenFOAM, Linux

Developer Tools: Git, Docker, Visual Studio Code, PyCharm

Libraries: Pandas, NumPy, Matplotlib, Pytorch, MPI for python, keras, Pytorch

CERTIFICATIONS

- | | |
|--|-------------------|
| • The Data Science Boot Camp 2022
Machine Learning, Data Visualization, Statistical Analyses | Sept. 2022 |
| • Foundations of Project Management
Project LifeCycle, Risk Management, Agile Methodology | Sept. 2022 |
| • How To Write and Publish a Scientific Paper
Literature Review, Manuscript Preparation, Peer Review Process | Feb. 2022 |
| • IELTS
Academic IELTS. | Overall Band: 6.5 |

REFERENCES

Ammar Mushtaq, PhD

Associate Professor

School of Interdisciplinary Engineering & Sciences (SINES), National University of Sciences and Engineering (NUST), H-12, Islamabad, Pakistan

Office: +92-51-8865736 Mobile: +92-323-4563474

Email: ammar.mushtaq@sines.nust.edu.pk

Dr. Absaar Ul Jabbar,

Assistant Professor

Department of Engineering

School of Interdisciplinary Engineering and Sciences (SINES), National University of Sciences and Technology (NUST), H-12 Campus, Islamabad, Pakistan

Tel: +92-51-9085-5725 — Email: absaar@sines.nust.edu.pk