Gulzar Ali

📞+923105955186 | ✉ gulzarali05@gmail.com | 🔗 linkedin.com/in/G-Ali-engr | ⭘ github.com/gulzarali19

SUMMARY

Aspiring computational scientist with expertise in fluid mechanics, machine learning, and CFD simulations, seeking to contribute to cutting-edge research in multi-scale and data-driven modeling.

EDUCATION

National University of Sciences and Technology (NUST)　　　　Islamabad, Pakistan
Master of Science in Computational Sciences and Engineering　　　　*Jan. 2023 – Present*
CGPA: 3.25/4.00

Courses: Computing for Computational Sciences and Engineering, Computational Linear Algebra, Applied Mathematics, Applied Machine Learning, Data Analysis and Statistics

University of Engineering and Technology (UET)　　　　Lahore, Pakistan
Bachelor of Science in Mechanical Engineering　　　　*Oct. 2018 – Aug. 2022*
Courses: Computational Fluid Dynamics, Finite Element Analysis, CAD

EXPERIENCE

Tutor　　　　Dec 2020 – Present
Remote Freelancer
- Mentored students with CFD and FEA Projects
- CFD Simulations on COMSOL and ANSYS

Parallel Computing Workshop Support　　　　Jun. 2024 – Aug. 2024
NUST　　　　*Islamabad, Pakistan*
- Develop ANSYS cases for Aerodynamics Simulations
- Develop parallel running codes for Convection Diffusion Equations using MPI
- Content Preparation 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

- Designed airflow simulation model of a data center, improving thermal prediction accuracy
- Trained deep learning models on the generated dataset to predict hotspots in racks
- Development of an application to estimate inlet flow conditions based on heat generation in racks

Simulation of Fluid Flow in Porous Media | *COMSOL Multiphysics*　　　　Oct. 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*　Jun. 2024 – Aug. 2024
Parallel Computing Workshop 2024, DenseFusion

- High Performance Computing and Parallel Computing
- Developed parallel Advection-Diffusion Codes
- Analyzed code performance using scalability tests

Calculating Lift and Drag using Second Order Vortex Panel Method | *Matlab*
- 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 | *Matlab, Ansys*
- Writing the code for 2D-FEA
- Calculated Stress and Strain by explicit methods using shape function and stiffness matrix
- Visualizing the results and validating it with ANSYS

Multiphase Flow Modelling Across Y-shaped Micro-channels | *Comsol*
- 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, OpenFOAM, Linux
Developer Tools: Git, Docker, Visual Studio Code, PyCharm
Libraries: Pandas, NumPy, Matplotlib, Pytorch, mpi4py, keras, Pytorch

CERTIFICATIONS

- **High Performance Computing and Parallel Programming**   Dec. 2024
  Distributed Computing, MPI/OpenMPI , Scalable Applications

- **The Data Science Boot Camp 2022**   Sept. 2022
  Machine Learning, Data Visualization, Statistical Analyses

- **Foundations of Project Management**   Sept. 2022
  Project LifeCycle, Risk Management, Agile Methodology

- **How To Write and Publish a Scientific Paper**   Feb. 2022
  Literature Review, Manuscript Preparation, Peer Review Process

- **IELTS**   Overall Band: 6.5
  Academic IELTS.

References can be provided upon request.