

# HASSAAN IDREES

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## Education

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**IMT School for Advanced Studies Lucca** Lucca, Italy  
PhD in Computational Mechanics 2023- In Progress  
**Courses:** Numerical Analysis, CFD, Advanced Topics in Computational Mechanics

**National University of Science and Technology (NUST)** Islamabad, Pakistan  
Masters in engineering (Mechanical Engineering) 2020-2023  
**Courses:** CFD I, CFD II, Advanced Fluid Mechanics, IC Engines  
**CGPA:** 3.5 / 4.0

**University of Engineering and Technology (UET), Peshawar** Peshawar, Pakistan  
Bachelor of Engineering (Mechanical Engineering) 2016-2020  
**Courses:** CAD, Fluid Mechanics, Heat and Mass Transfer, Thermodynamics, Automatic Controls

## Work Experience

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**University of Engineering and Technology (UET) Peshawar** Peshawar, Pakistan  
Assistant Trainer at Center for Intelligent systems and network research (CISNR)  
Assistant Trainer: *April 2023 – December 2023*

- *Content Creation related to training of municipalities workers related to our SCADA Devices.*
- *Worked as an assistant manager / supervisor in production of SCADA devices.*
- *Delivered nationwide seminars and training to municipal workers and government officers regarding the use of IOT based devices in their municipalities.*

**National University of Science and Technology (NUST)** Islamabad, Pakistan  
Research Assistant in a Higher Education Commission Pakistan's funded project Integrated Open-Source Engineering (IOSE) under NUST.  
Research Assistant: *Nov 2021 – Dec 2022*

- *Worked on Projects related to numerical and experimental study of water desalination.*
- *Used OpenFOAM software for my CFD simulations.*
- **Trainer in CFD OpenFOAM Workshop at SMME, NUST.**
- **Teaching Assistant** in a graduate-level course of Computational Fluid Dynamics and Heat Transfer.
- **Conducted Nationwide seminars related to impact of AI in Mechanical Engineering.**

## Research Projects

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**Numerical Investigation of Flow around a multiple slotted cylinder using OpenFOAM** Pakistan  
Numerical investigation and comparison of flow around a slotted and normal cylinder were carried out on OpenFoam.  
*Project Leader: September 2021 – February 2023*

- *Flow over the cylinder with multiple slits was carried out at low Reynold Number.*
- *A significant reduction in drag coefficient was observed for a cylinder with multiple slits.*

**Estimating Carbon Footprint and Devising a decarbonization plan for UET Peshawar** Pakistan  
*Calculated the Carbon emissions and then devised a decarbonization plan for UET Peshawar*  
*Project Leader: September 2019 – September 2020*

- *Teamwork: Led a team of 4 undergraduates in calculating the total carbon emissions of UET Peshawar.*
- *Devised a Decarbonization plan to reduce carbon emission for UET Peshawar.*

## Internship Experience

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**LalPir and PakGen Power Limited** Muzaffargarh, Pakistan  
A four-week internship program in a Thermal Power Plant aimed to develop an understanding of working of powerplant and the reduction of emissions.  
Intern: *Aug 2021 - Sep 2021*

- *Developed understanding of the working of a power plant and its components such as Boiler, Turbine, Balance of Plant, and Condenser. Techniques related to control plant emissions were also studied.*

- *Worked with site engineers and staff in startup of the plant and in its basic maintenance.*

### **Pak Electron Limited (PEL)**

Lahore, Pakistan

A four-week virtual internship programme aimed to develop corporate skills among fresh graduates and students.

Intern: *Sep 2020 – Oct 2020*

- *Learned different concepts regarding lean manufacturing, inventory management and quality management.*
- *Completed an online session BLOOM. Aimed to develop corporate skills such as time management, leadership, and teamwork.*

### **Impact Research Lab UET Peshawar**

Peshawar, Pakistan

Assisted in ongoing research on impact testing of shale rocks.

Research Intern: *July 2019 – September 2019*

- *Worked directly under the supervision of Prof. Dr. M. A. Irfan (Dean UET Peshawar) in Research Impact Lab, Department of Mechanical Engineering UET Peshawar.*
- *During My internships I did various tests such as Hopkinson Pressure Test and learned the use of strain gauges, oscilloscope, and data analysis.*

### **Pakistan Locomotive Factory Risalpur**

Nowshera, Pakistan

Experienced design and rebuild process of a locomotive and its parts along with its maintenance.

Summer Intern: *August 2018 – September 2018*

- *Design Process of Locomotive Parts: Experienced Design process of locomotive parts such as gear box, shafts etc.*
- *CNC Machining: Hands on experience on CNC machining such as CNC Turret, CNC Pipe bending machine etc.*

### **Mirage Rebuild Factory, Pakistan Aeronautical Complex**

Kamra, Pakistan

Understanding of various processes involved in Rebuilding and Maintenance of Mirage Aircraft.

Summer Intern: *July 2018 (1month)*

- *Rebuild and Maintenance: Briefed with various processes involved in rebuild and maintenance of Mirage Aircraft.*
- *Quality Control: Inspected and Briefed with quality control management at Mirage Rebuild Factory.*

### **Additional Skills**

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- **Technical Skills:** Python, OpenFOAM, Microsoft Word/ Excel /PowerPoint (Intermediate)
- **Interests:** Book Reading (Fiction, Self Help Guides), Cooking, Playing and Watching Cricket
- **Soft Skills:** Teamwork, Communication, Time Management.

### **Publications**

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- **Idrees, H.,** Ali, S., Sajid, M., Rashid, M., Khawaja, F.I., Ali, Z., Anwar, M.N. Techno-Economic Analysis of Vacuum Membrane Distillation for Seawater Desalination. *Membranes* 2023, 13, 339. <https://doi.org/10.3390/membranes13030339>
- Shoukat, G., **Idrees, H.,** Sajid, M. et al. Numerical analysis of permeate flux in reverse osmosis by varying strand geometry. *Sci Rep* 12, 16636 (2022). <https://doi.org/10.1038/s41598-022-20469-0>