

Hussain Abbas

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EXPERIENCE

UNIVERSITY OF ST CYRIL & METHODIUS | CFD INTERN

Oct 2024 - Dec 2024 | Skopje, North Macedonia

SUPERVISOR- Marija Lazarevijk

- Perform CFD analysis and modeling of unsteady, incompressible airflow around a wind turbine with varying inlet velocities using ANSYS FLUENT.

CERN | MECHANICAL INTERN

Feb 2024 - JUN 2024 | Geneva, Switzerland

SUPERVISOR-Jan Buesa Orgaz

- Conducted finite element (FE) thermo-mechanical simulations of beam impacts on mechanical components, including collimator jaws.
- Calculated forces on high-precision mechanical components using analytical methods.

VOLVO CARS | THERMAL ANALYSIS TRAINEE

Feb 2023 - Feb 2024 | Gothenburg, Sweden

SUPERVISOR-RANDI FRANZSKE & EMIL WILESON

- Optimized 3D CFD simulations of the VOLVO XC40 cabin using STARCCM+, reducing solver time from 115 hours to 23 hours with a maximum temperature deviation of 0.8°C.
- Analyzed and redesigned trunk size in ANSA to assess energy consumption impacts.
- Developed 2D/3D heat transfer models to study electronic component heating under snow coverage, improving reliability under cold conditions.

WARSAK HYDEL POWER STATION | MECHANICAL INTERN

Nov 2019 - Aug 2021 | Warsak, KPK, Pakistan

- Contributed to the overhaul of Unit 4 Francis Turbine at Warsak Hydel by preparing SOPs, reports, and ensuring safety tags compliance, completing the maintenance 1.5 months ahead of schedule.

PAKISTAN AERONAUTICAL COMPLEX | MECHANICAL INTERN

JUL 2018 - AUG 2018 | Kamra, Punjab, Pakistan

- Conducted CAD design modifications and CFD analysis of the intake system for fighter aircraft using ANSYS FLUENT to improve pressure losses and engine performance.

HEAVY MECHANICAL COMPLEX | MECHANICAL DESIGN INTERN

JUN 2018 - JUL 2018 | Taxilla, Punjab, Pakistan

- Created assembly drawings, part specifications, and BOMs in SolidWorks, and conducted CFD analysis for temperature, pressure, and velocity distribution in a shell and tube heat exchanger.

SKILLS

SKILL	PROFICIENT	GOOD KNOWLEDGE
PROGRAMMING	MATLAB	PYTHON
CAD	PTC CREO	SOLIDWORKS • ANSA
CFD	STARCCM+	ANSYS FLUENT
OTHER	MS OFFICE SUITE	ADOBE PREMIERE • LIGHTROOM

EDUCATION

SAPIENZA UNIVERSITY ROME

MSc TRANSPORT SYSTEM ENGG

Sept 2021 - Mar 2024 | ITALY

Master Thesis: Optimisation of Road Runoff Prediction Tools

Final Grade : 96 / 110 • 87% marks

KU LEUVEN

ENGINEERING SCIENCE

Feb 2022 - Feb 2023 | BELGIUM

UET PESHAWAR

B.Sc. IN MECHANICAL ENGG

Sept 2015 - Sept 2019 | PAKISTAN

Final Grade : 3.4 / 4.0 GPA • 85% marks

Top 10% of students

Bachelor Thesis: Fuel Theft Prediction System (3rd/43 Exhibited Projects)

COURSEWORK

GRADUATE

Programming for Transport System • Advanced Mechanical Design • Computational Thermo-fluids Analysis • Virtual Product Development • Artificial Neural Networks & Deep Learning • Transport Modelling • Railway Engg • Traffic & ITS • Safety for Industrial Aspects

UNDERGRADUATE

Machine Design • Engg Mechanics • Engineering Drawing • Computer Aided Design (CAD) • Heat & Mass Transfer • Fluid Mechanics • Material Science • Thermodynamics • Powerplants • Automatic Control • Engg Dynamics • Mechatronics • Metallurgy

LANGUAGE SKILLS

LANGUAGE	CEFR	ORGANISATION
ENGLISH	C1	IELTS
DUTCH	A2	CLT KULEUVEN
ITALIAN	A2	

FAMILIAR

C++ • JAVA • \LaTeX • CATIA V5 • SOLIDEDGE • AUTOCAD • TEAMCENTER • ARDUINO • LINUX • WINDOWS

TECHNICAL PROJECTS

CABINHEATUP OPTIMISATION | STARCCM+, ANSA, JAVA | 2024

SUPERVISOR: DR RANDI FRANZKE / EMIL WILESON

- **Phase 1:** Validated wind tunnel data against simulations to ensure accurate temperature readings.
- **Phase 2:** Developed optimized parameters (timestep, iterations) for improved solver efficiency in transient and steady-state simulations.
- **Phase 3:** Accelerated convergence by freezing flow during transient phases and increasing timesteps.
- **Phase 4:** Automated batch simulation runs using Java macros.

FUEL THEFT PREDICTION SYSTEM | OBD, PYTHON | 2019 SUPERVISOR: DR MUHAMMAD ALAM ZAIB KHAN

- Designed a fuel theft prediction system as part of B.Sc. thesis, to monitor fuel consumption in university vehicles.
- **Phase 1:** Collected sensor data from the ECU using an OBD tool (ELM 327).
- **Phase 2:** Transferred data to a web server via the Torque Pro application.
- **Phase 3:** Analyzed data to define three fuel theft conditions.
- **Phase 4:** Tested and validated results; implemented notifications for the vehicle owner in case of fuel theft detection.

TRAFFIC CONGESTION ESTIMATION | MATLAB | 2022 SUPERVISOR: DR CHIARA COLUMBARONI

- Developed a real-time traffic congestion estimation system using MATLAB for urban roads.
- Implemented K-Means Clustering Algorithm to assess congestion levels across different roads.
- Applied Dijkstra's Algorithm to determine the shortest congestion-free route from the driver's location to their destination.

WATER DESALINATION SYSTEM | ANSYS/ SOLIDWORKS | 2018 SUPERVISOR: DR ALI KAMRAN

- Designed a parabolic trough and solar still desalination system to produce drinkable water for the region of Gwadar.
- Achieved 12 liters of purified water per 8-hour operating cycle with a net efficiency of 68
- Laboratory testing showed 97% removal of contaminants from initial saline water samples.
- Project results were published in IEEE Xplore.

AWARDS

YEAR	DESCRIPTION	ORGANISATION
2023	IAESTE TRAINEESHIP	VOLVO CARS SWEDEN
2020	M.Sc. SCHOLARSHIP	ITALIAN GOVT (LAZIODISCO SCHOLARSHIP)
2019	3 th /43	BSc FINAL YEAR PROJECT EXHIBITION
2015	229 th /13000	UNIVERSITY ENTRANCE EXAMINATION
2015	B.Sc. SCHOLARSHIP	KPK BENEVOLENT FUND

CERTIFICATIONS

AT VOLVO CARS BY SIEMENS

STARCCM+ Fundamentals

STARCCM+ Heat Transfer Simulations

EU ERASMUS+ GRANTS

€300 Exchange, Zakopane, Poland

€7000 Exchange, Leuven, Belgium

€320 Exchange, Panezevys, Lithuania

€285 Exchange, Sibiu, Romania

PUBLICATIONS

- [1] S. A. Hussain Abbas. Development of experimental model for water desalination by harvesting solar energy. *IEEE 23rd International Multitopic Conference (INMIC)*, 2020.