

Nauman Ahmed Maan

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ABOUT ME

Mechanical Engineering graduate with strong hands-on experience in **3D CAD design (SolidWorks)** and **FEA/CFD simulations (ANSYS Workbench)**. Proven ability to design, analyze, and optimize mechanical components through academic and industrial projects, including structural, thermal, and aerodynamic analysis. Seeking a design-focused engineering role.

EDUCATION AND TRAINING

Islamabad, Pakistan
BACHELORS OF SCIENCE IN MECHANICAL ENGINEERING National University of Science and Technology

Website <https://nust.edu.pk/>

Lahore, Pakistan
FSC. Punjab Group of Colleges

WORK EXPERIENCE

MECHANICAL ENGINEER – FREELANCE – 01/05/2022 – Current

- Designed and developed **3D CAD models** of mechanical and aerospace components using **SolidWorks**.
- Performed **finite element analysis (FEA)** and **computational fluid dynamics (CFD)** simulations using **ANSYS Workbench and ANSYS Fluent**.
- Conducted **structural, thermal, and aerodynamic analyses** to evaluate performance, safety, and durability of designs.
- Applied realistic **loading conditions, boundary constraints, and material properties** based on engineering standards.
- Interpreted simulation results including **stress, deformation, temperature distribution, lift, and drag**.
- Optimized designs for **strength, weight reduction, thermal efficiency, and aerodynamic performance**.
- Prepared technical documentation, simulation reports, and design summaries for client review.
- Ensured accuracy and quality through **mesh refinement, result validation, and design iterations**.
- Collaborated with clients to understand project requirements and deliver solutions within defined timelines.

EDUCATIONAL RESEARCHER – VOLUNTARY – 01/02/2025 – Current – UNITED STATES

- Assisted in conducting **mental health research** focusing on data collection, organization, and analysis.
- Supported literature review activities by reviewing academic papers and summarizing key findings.
- Contributed to the design and refinement of **research questionnaires and study protocols**.
- Helped manage research data, ensuring accuracy, confidentiality, and ethical compliance.
- Collaborated with multidisciplinary team members to discuss findings and improve research methodology.
- Assisted in preparing **research documentation, reports, and presentations**.

HSE ENGINEER – VELOSI ASSET INTEGRITY LIMITED. – 01/03/2024 – 01/10/2024 – LAHORE, PAKISTAN

- Conducted thorough risk assessments and hazard identification processes to mitigate potential workplace hazards. Recommended effective control measures to minimize risks.
- Documentation & Reporting: Maintained accurate records of all HSE activities, including safety audits, incident reports, and training records. Prepared regular reports for senior management, highlighting key safety metrics and areas for improvement.
- Stakeholder Collaboration: Collaborated with cross-functional teams, including project managers, engineers, and contractors, to integrate HSE practices into project planning and execution. Ensured all stakeholders were aligned with safety goals.
- Regulatory Compliance: Kept up-to-date with changes in HSE regulations and industry best practices, ensuring the company's operations remained compliant with all legal and regulatory requirements.

- Completed a production internship at Honda Atlas Cars, gaining practical experience in the manufacturing industry.
- Assisted in various production processes, including assembly line operations and quality control.
- Collaborated with team members to identify and implement process improvements, resulting in increased efficiency and productivity.
- Learned about the importance of quality control and adhering to strict manufacturing standards.
- Worked on the project of automating the door sub-assembly process to improve the efficiency and reduce time for the process.

● PROJECTS

3D Wing Analysis for Drag and Lift Calculation:

Freelance CFD Project

- Performed **3D aerodynamic analysis** of a wing using **ANSYS Fluent** to evaluate lift and drag characteristics.
- Developed accurate wing geometry and computational domain for external flow simulation.
- Generated high-quality meshes and conducted **mesh independence studies** to ensure reliable results.
- Applied appropriate boundary conditions and turbulence models for aerodynamic performance evaluation.
- Analyzed pressure contours, velocity fields, and streamlines to determine **lift and drag coefficients**.

PCM Analysis for Cooling Time and Phase Change Ratio:

Freelance Thermal Analysis Project

- Conducted **thermal analysis** to evaluate the cooling time and phase change behavior of **Phase Change Materials (PCM)**.
- Developed simulation models to study **heat transfer and temperature distribution** during the phase transition process.
- Analyzed the **phase change ratio** under varying thermal conditions to assess material performance.
- Evaluated the effectiveness of PCM for **thermal energy storage and cooling applications**.
- Interpreted simulation results to identify optimal operating conditions and material usage.

Stress Analysis of Formula SAE Car Chassis:

Freelance Structural Analysis Project

- Performed **structural and stress analysis** of a Formula SAE car chassis using **ANSYS Workbench**.
- Developed and refined the chassis geometry for simulation under realistic loading conditions.
- Applied boundary conditions based on Formula SAE design and safety requirements.
- Evaluated **von Mises stress, deformation, and factor of safety** to identify critical structural regions.
- Conducted design iterations to improve structural integrity while minimizing overall weight.

Design of Fuselage for Aircraft:

Freelance CAD Design Project

- Designed a complete **aircraft fuselage 3D model** using **SolidWorks**, focusing on geometry accuracy and structural layout.
- Developed detailed **part and assembly models**, including frames, skin, and internal structural elements.
- Applied basic **aerodynamic and aircraft design principles** during the conceptual and detailed design stages.

Stress Analysis of Bicycle Frame:

Freelance Structural Analysis Project

- Performed **structural and stress analysis** of a bicycle frame using **ANSYS Workbench**.
- Developed a detailed 3D model and applied realistic loading conditions representing rider weight and road forces.
- Defined appropriate boundary conditions and material properties for accurate simulation results.
- Evaluated **stress distribution, deformation, and factor of safety** to identify critical regions of the frame.

01/10/2022 – 13/06/2023

Final Year Project: Design and Development of Electro-Magnetic Propulsion Device:

- Designed and developed an **electro-magnetic propulsion device** as a final year engineering project.
- Created 3D CAD models and evaluated mechanical and functional performance.
- Conducted testing and analysis to validate design feasibility and performance.
- Managed project documentation and team coordination.

Mouse-Trap Powered Cart:

University Engineering Project

- Designed and built a **mouse-trap powered cart** to convert stored spring energy into controlled mechanical motion.
- Developed the mechanical layout including chassis, wheels, axle, and power transmission mechanism.
- Applied principles of **mechanics, energy conversion, torque, and friction** to maximize travel distance and efficiency.
- Fabricated and assembled components using basic manufacturing tools and materials.

Line Launcher:

University Engineering Project

- Designed and developed a **mechanical line launcher system** to project a line accurately over a specified distance.
- Performed conceptual design and mechanical layout of the launching mechanism and supporting structure.

iTrack Alarm

Mobile Application | Independently Developed & Launched

Description:

iTrackAlarm is a mobile application designed to ensure users to wake up on time by keeping their eyes open. The app focuses on providing a **simple, reliable, and user-friendly alarm and tracking experience**, enabling users to stay organized and responsive in their daily activities.

Key Contributions:

- Conceptualized, designed, and developed the application from idea to deployment.
- Implemented core features for **alarm scheduling, tracking, and real-time notifications**.
- Focused on intuitive **UI/UX design** to ensure ease of use and accessibility.
- Tested and debugged the application to ensure stability and performance across devices.
- Successfully published and maintained the app on the **Google Play Store**.

Link <https://play.google.com/store/apps/details?id=com.itrack.alarm>

QRA Study for Avancechem Chemical Manufacturing Facility

Company: Avancechem FZE

Role: QRA for a chemical manufacturing and trading facility in Sharjah.

Key Responsibilities: Assessed risks associated with chemical production (polysulfide cure paste, waterproof coatings, etc.) to mitigate operational hazards.

Collaborators: Beeah Group (Environmental Consultant), Velosi (QRA Consultant).

HSE Study for Touat Oil Field (Phase 2)

Company: SONATRACH

Role: Conducted QRA and FERA studies for the creation of offsite collection networks and surface installations for oil production wells.

Key Responsibilities: Evaluated hazards related to oil production and stabilization, ensuring the safety of processing and transport operations.

Collaborators: Velosi (HSE Consultant).

QRA and FERA Study for Al-Dhannah City Synthetic Natural Gas Plant

Company: ADNOC Group

Role: Performed QRA and FERA studies for the Synthetic Natural Gas (SNG) plant in Al-Dhannah City.

Key Responsibilities: Analyzed risks related to the production and storage of SNG using LPG-air blending processes.

Collaborators: Velosi (HSEIA Consultant).

QRA and FERA Study for Optimum Shah Gas Expansion Project

Company: Abu Dhabi Gas Development Company (ADNOC Sour Gas)

Role: Conducted QRA and FERA studies to assess hazards and risks introduced by the new modifications in Unit 720 of the Shah Gas Expansion Project.

Key Responsibilities: Integrated results with existing risk assessments to ensure overall plant safety.

Collaborators: Saipem (EPC Contractor), Velosi (QRA Consultant).

QRA Study for Tricore Surfactants Technologies FZC

Company: Tricore Surfactants Technologies FZC

Role: Conducted QRA for a chemical manufacturing and storage facility producing anionic surfactants.

Key Responsibilities: Evaluated risks associated with the manufacturing, packaging, and storage of chemicals, particularly for agro-industrial applications.

Collaborators: Beeah Group (Environmental Consultant), Velosi (QRA Consultant).

QRA Study for Zetco FZE Hydrocarbon Distillation Plant

Company: Zetco FZE

Role: Conducted QRA for a hydrocarbon distillation plant in Sharjah, UAE.

Key Responsibilities: Assessed hazards related to the distillation of hydrocarbons, including gasoline, kerosene, and gas oil.

Collaborators: Beeah Group (Environmental Consultant), Velosi (QRA Consultant).

QRA Study for Asia Petrochem Facility in Sharjah

Company: Asia Petrochem FZE

Role: Conducted QRA for a tank farm handling petroleum, chemicals, and petrochemicals.

Key Responsibilities: Identified hazards, assessed risks, and ensured compliance with safety standards for 16 storage tanks with a cumulative capacity of 26,660 kl.

Collaborators: Beeah Group (Environmental Consultant), Velosi (QRA Consultant).

SKILLS

SOLIDWORK | AutoCad 2D -3D | ANSYS Workbench (Simplified) | Microsoft Office | Phast and Safeti | Ansys Fluent | Microsoft Excel

HONOURS AND AWARDS

Certificate of participation at Mechathon Event: - UET

Stood out third in this event for solving a practical engineering problem.

Certificate of participation at Nust Environment and Sustainability Club event: - NUST

Proposed an idea for conservating the environment.

VOLUNTEERING

Islamabad

Community Service:

Had a wonderful teaching experience at EOTO street school Islamabad.