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Saad Ahmed Rana

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ABOUT ME

As a registered mechanical engineer with the Pakistan Engineering Council, I am passionate about gaining the knowledge and expertise to become an expert solutions provider. With a diverse experience across multiple disciplines that equips me with a distinctive set of technical skills, I'm ready to contribute a unique blend of expertise to innovative projects in the realm of engineering.

WORK EXPERIENCE

Management Trainee Engineer
Fauji Fertilizer Company Ltd. [16/08/2023 – Current]

Website: https://ffc.com.pk/
Email address: saad_ahmed@ffc.com.pk
Link: https://drive.google.com/drive/folders/1LEzO_9_azQKQ1W0eKH-uo4Uu1bfZQfTJ?usp=drive_link

Practical Training on Equipment: Programmed training on design, working and maintenance of pumps, compressors, turbines, valves, heat exchanges, reactor vessels and refractories.
Resource Management: I highlighted key areas that required revision of manpower distribution which made the workflow smoother and streamlined the maintenance procedure. Also looked after material ordering and job distribution on daily basis.
Quality Assurance: I highlighted key-areas for moving towards Six-Sigma and brought down the rejection ratio of urea prills from 8% to 6%.

EDUCATION AND TRAINING

BS Mechanical Engineering
Pakistan Institute of Engineering and Applied Sciences [17/09/2019 – 27/06/2023]

Address: Lehtrar Road, Nilore, Islamabad, 45650
Website: http://www.pieas.edu.pk/
Field(s) of study: Machine Design | Mechanics of Materials | Heat Transfer | Computer Fundamentals | Computer Aided Design | Fluid Mechanics | Engineering Dynamics | Finite Element Analysis | Total Quality Management | Mechanical Vibrations
Final grade: 3.77/4.0
Thesis: MATLAB Application Development for Parametric and Performance Analysis of a Single-spool Turbojet Engine
Link: https://drive.google.com/drive/folders/1WMG3NXyvuguFv29R895jFNKbZ-raQTv3?usp=sharing

Summary
During my degree, I received a PKR 1.2 million research fellowship and worked on projects involving control systems, turbojet engines, and gas turbines. I developed a MATLAB application for turbojet engine analysis and conducted a UAV engine case study. I also served as President of the American Society of Mechanical Engineers at PIEAS, organizing seminars on Industry 4.0 advances and coordinating technical events. I also took an active part in the "EFX: Engineering Festival" organized by ASME where I developed the code for a Collision Avoidance Wheelchair(CAW).

DIGITAL SKILLS

MATLAB / Python / SOLIDWORKS / Simulink / xflr5 (basic) / Ansys and Ansys CFX / FUSION 360/AUTOCAD/PTC CREO / Craftware / Microsoft Office (Outlook, Excel, Word, PowerPoint) / C programming / Raspberry Pi and Arduino Programming

PROJECTS

Design and Fabrication of an Autonomous UAV for Teknofest'22, Turkey

[10/01/2022 – 07/09/2022]

Bronze medal for originality in the design, fabrication, and testing of a fully autonomous Unmanned Aerial Vehicle with image detection for precision-agricultural purposes. My contribution to the project involved the CAD design of the UAV and the programming for image detection. The UAV was tested for spraying pesticides at agricultural fields at TeknoFest 22', Turkey. The team won a cash prize of TRY 15000 and third position among 84 participating teams. Key skills learned include Raspberry Pi, flight controller, python programming, laser cutting, 3D printing, CNC milling, Solidworks, ANSYS, and XFLR5.

Link: https://drive.google.com/drive/folders/1VZXFBoCv0CTOtGqNg7xz5MxMSMxJoqE4?usp=sharing

Design and Development of Scaled Slave Side Manipulator System to Be Used in Hot Cell

[01/06/2022 – 01/06/2023]

I actively contributed to the design and development of a scaled slave-side continuum robot tailored for master-slave manipulator environments, emphasizing flexibility and compliance in hazardous conditions. Within the team, my role involved implementing a continuum arm with flexible springs, a sophisticated control system, a wire tensing mechanism for precise control, and a linear bed for fluid movement. I played a key part in automating the wire tensioning mechanism using individual motors for control in both axes. Additionally, I collaborated on the development of an intuitive control system using joysticks for seamless manipulation of the slave-side system. This project not only showcased our team's proficiency in innovative engineering solutions and effective problem-solving but also involved coding the control system in the Arduino programming language.

Link: https://drive.google.com/drive/folders/1WZ1TUw3sXFdVeQp-1jpiynxu1CdVZvYK?usp=sharing

Design and Development of Pyrolysis Plant for Plastic Waste Recycling

[15/09/2019 – Current]

I designed a prototype for a fluidized-bed pyrolysis plant that converts plastic waste to crude oil and ultimately can be refined to fuel. My main contribution was the analysis of the fluidized bed and modelling the flow through the reaction vessel. Our team won a cash prize of PKR 20,000 at INNOVATE and the venture was s presented at the Dhaka Regional Summit of Hult Prize in May 2022. Key skills learned include CAD modelling, data analyses, design, and fabrication.

Link: https://drive.google.com/drive/folders/1LLbDs4iAED0RcMbFeJNWyZWfduLMmAbT?usp=share_link

HOBBIES AND INTERESTS

Courses Attended

Introduction to Programming with MATLAB [08/07/2018 – 18/09/2018]

Vanderbilt University course that made me proficient in MATLAB coding. I used the skills to develop an application in MATLAB environment for engine analysis as my final year project.

Python Data Structures [01/08/2020 – 19/08/2020]

Offered by the University of Michigan that rendered me with enhanced Python proficiency. Multiple projects were developed in Python including precision agriculture UAVs.

Introduction to AI [01/08/2020 – 19/08/2020]

2ECTS course by the University of Helsinki for a basic understanding of AI.

Achievements

President of ASME-PIEAS [01/07/2022 – 27/06/2023]

Delivered a seminar on Industry 4.0 and developed a voice-activated wheelchair. Key skills learned were management, research and communication.

Duke of Edinburgh International Award (Bronze) [03/12/2018 – 01/06/2018]

Conducted technical training for physically challenged children gaining expertise in Microsoft Excel and documentation and reporting on PowerPoint and MS Word.

Director Muaawin-e-ilm [01/12/2019 – 01/02/2022]

Held meetings with different Non-Governmental Organizations(NGOs) and collaborated in various welfare projects on a national level engaging people from all over the country. Developed strong interpersonal and communication skills.

Link: https://drive.google.com/drive/folders/1-fvU4-No96qYY_BbaG95nqiWSTLPEacK?usp=drive_link