Abbas-Nahle Dabdoub

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WORK EXPERIENCE

Mechanical Engineering Trainee at Consult SARL

May to July 2024

- Read codes and standards relating to fire protection and plumbing systems, such as National Fire Protection Association (NFPA) 101, NFPA 13, NFPA 14, NFPA 20, and the International Plumbing Code (IPC).
- Performed fire protection system calculations on a given design, given on **AutoCAD**, using the **Elite fire protection software**.
- Learned about the different systems in buildings and MEP, such as water supply, HVAC, heating and drainage systems, through investigating different **AutoCAD** files of various projects.
- Performed water supply, HVAC, heating and drainage system calculations to verify the given system designs.
- Designed water supply, HVAC, heating and drainage systems for a villa.

PROJECTS

Building Management System Design

Spring 2024

- Designed a building management system (BMS) for use by a school in the United States. The school consisted of a basement, 3 floors, and a roof. The BMS monitored and controlled different components of the system, such as lights, HVAC systems, boilers, chillers, fire and security systems.
- A BMS riser, floor drawings, and equipment control diagrams were drawn according to the design made.
- **AutoCAD** was used to draw the panel boards present on each floor.
- A specifications sheet was made and the BMS system components were chosen to meet the design requirements.

HVAC System Design

Fall 2023

- Designed an HVAC system for a floor plan based on ASHRAE standards. The floor plan was divided into zones, and the heating and cooling loads were found for each zone.
- **HAP** was used to determine the cooling loads as well as the required air flow to each zone.
- **Revit** was used to visualize the duct design after the duct size calculations were performed.

Solar PV System Design

Fall 2023

- Designed a solar PV system for use by a supermarket in Lebanon. The supermarket was to run completely on solar energy. Day load and night load were considered. The system design discussed the PV panels and their orientation, inverters, batteries and cables.
- **PVsyst** was used to aid with the design of the solar PV system.
- The total cost of the system was calculated based on the design made.

Mechanical Elevator for Paraplegics Design and Prototype

Spring 2023 - Spring 2024

- Designed an elevator that aims to help people on wheelchairs gain access to the second floor of a two floor building at Rafik Hariri University. Using a crank inside the elevator, the user is able to safely take themselves up to the second floor, and then switches a lever to engage brakes to descend safely back to the first floor (ground floor).
- Mechanism design, force and stress analysis, and material selection were performed, and safety considerations were of high priority.
- **AutoCAD** was used to design the elevator.
- **SolidWorks** was used to simulate the motion of the elevator as well as find the stresses and deflections of the elevator.
- **MATLAB** codes were written to perform calculations and output graphs.
- ASME codes and standards and ABET codes of ethics of engineers were considered because safety was of high priority.
- A small scale prototype, scaled down by a factor of 7, was built to demonstrate the functionality of the mechanism.

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EDUCATION

Rafik Hariri University (RHU) - Bachelor of Engineering in Mechanical Engineering

ABET Accredited Program - CGPA: 93.28% (3.87/4) - Major GPA: 93.67% - Graduated in July 2024 with High Distinction.

SKILLS

TECHNICAL SKILLS

- **PVsyst**
- **MATLAB**
- **Ansys Fluent**
- **Ansys Mechanical APDL**
- **Autodesk AutoCAD**
- **SolidWorks**
- **Carrier HAP**
- **Microsoft Office**

SOFT SKILLS

- **Ability to work individually or as a part of a team**
- **Ability to manage time and tasks properly**
- **Excellent written and verbal communication skills**

IMPORTANT COURSES

- **Renewable Energy:** Discusses various renewable energy sources with a focus on solar energy.
- **HVAC:** Introduces heating and cooling load calculations as well as different HVAC systems.
- **Building Management Systems (BMS):** Discusses the monitoring and control of various building systems.
- **Finite Element Method for Engineers:** Focuses on the basic concepts of finite element methods, such as modeling and analysis of structural and heat transfer problems.
- **Computational Fluid Dynamics (CFD):** Introduces computational techniques to solve thermal-fluid problems, covering various solvers.
- **Automotive Engineering:** Studies the various automotive components and systems such as engines, transmission, steering, and fuel.
- **Engineering Project Management:** Covers key components of engineering project management such as project time management, cost estimation, engineering ethics, and risk management.

CERTIFICATES

Ford EV Engineering Advanced Job Simulation on Forage

November 2024

- Explored battery performance analysis by comparing data from diverse scenarios, providing insights into optimizing battery performance for different use cases.
- Built a robot operating system (ROS) package, gaining proficiency in ROS fundamentals and components.
- Examined the integration of ROS components in a practical setting, showcasing practical knowledge in the context of robotic systems.

GHD Engineering Consulting Job Simulation on Forage

August 2024

- Performed options analysis for different rail alignment options for the GHD transport team.
- Used design documents to formulate cost and construction time estimates for the different options.
- Investigated and compared the impact of each option on stakeholders, the environment and design outcomes.
- Compared each option using a weighted options analysis spreadsheet and communicated key findings to the client.

LANGUAGES

English (Fluent), Arabic (Fluent), German (B1 Level), Spanish (A2 Level).