Abdelrahman Amin M. Yousef

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Portfolio link :https://aminyousef.github.io/amineyousef.github/.

EDUCATION

MIT-Fab Foundation — **Amman, Jordan**
High diploma in Digital fabrication (Final project: Design of Prosthetic Hand) — *Jan 2022 - June 2022*
My website : https://fabacademy.org/2022/labs/techworks/students/amin-yousef/

University of Jordan , School of Engineer — **Amman, Jordan**
Bachelor of Science in Mechanical Engineering. (Final project: Design of A Self-Configuring Modular Robot) — *Sep 2016 - Sep 2021*
Cumulative GPA:3.21/4.00

PROFESSIONAL EXPERIENCE

HTU | Al Hussein Technical University, Hacker space Engineer — **Amman, Jordan**
Nov 2023 - Present

- Provide technical support to students, particularly in their final projects, within the university's hackerspace.
- Organize and oversee robotics competitions.
- Teaching Assistant in Advanced Manufacturing, STEM, ETS, and Advanced Workshop labs.
- Provide technical insights and expertise for research projects.

Afaq, Mechanical Design Engineer — **Amman, Jordan**
Nov 2022 - Nov2023

- Design and develop efficient production machines for food and pharmaceutical industries, utilizing methods such as CNC machining, sheet metal fabrication, turning, argon welding, grinding, polishing, and laser, plasma, and water jet cutting.
- Apply appropriate manufacturing processes, considering material properties, production volume, cost, quality requirements, and driving continuous improvement for cost optimization and innovation.
- Conduct feasibility studies and risk assessments to ensure technical viability and compliance with standards and regulations.
- Collaborate with cross-functional teams to integrate design with manufacturing processes, ensure quality standards, and manage procurement.
- Generate CAD models using Autodesk Inventor software, creating detailed and accurate representations of production machine designs for analysis, visualization, and further design iterations.
- Export technical drawings from CAD models, providing comprehensive documentation and specifications for manufacturing and assembly processes.

Freelance — **Amman, Jordan**
Sep 2021 - Present

- Customizing small-scale CNC machine designs for home shops, considering specific bed dimensions and optimizing space efficiency.
- Prototyping and testing wide range designs to ensure functionality, usability, and manufacturability.

Fab Lab TechWorks, Digital Fabrication Intern — **Amman, Jordan**
July 2021 - July 2022

- CAD Design & Product Development: Expertise in using CAD software for product design, incorporating engineering principles.
- Versatile Prototyping: Proficient in utilizing additive manufacturing technologies (FDM, SLA, LDM, SLS) and subtractive manufacturing (CNC machining, and laser cutting) for rapid prototyping. Capable of transforming digital designs into physical prototypes with precision and efficiency.
- CNC Machining & Laser Cutting: Skilled in operating CNC routers for precise component fabrication.
- Experienced in molding and casting processes with Silicone Molds for replicating and producing multiple identical parts.
- Involved in the design and fabrication of soft robotics projects, utilizing innovative materials and techniques to create flexible and responsive robotic systems.
- Designing and fabricating basic PCBs, utilizing microcontrollers such as ATtiny and ATmega.

TECHNICAL SKILLS & ABILITIE

Software: CAD (SollidWorkes, Creo, Fusion360, Autodesk inventor), Ansys (Static structure), Cura , V-Carve, Inkscape, MS Office (Excel, PowerPoint, Word), Autodesk Eagle, Photoshop.
Hardware: 3D printer (FDM, SLA, LDM, SLS), Fabrication (laser Cutter, CNC Milling, Vinyl, Molding and Casting)
Soft Robotics, dealing with manufacture process (CNC milling machine, Turning, sheet metal, grinding, polishing, assembly)

PROJECTS & PRESENTATIONS

FAB ACADEMY, AMMAN FAB LAB "TECHWORKS" **Amman, Jordan**

Design and Fabricate of Prosthetic Hand

- The main structure is printed in place, in other words, all parts of the main structure can be fabricated in a single stage using a FDM 3D printer.
- The design is parametric by connecting parametric CAD file dimensions with adjustable parameters, resulting in designs that can be easily customized to meet specific size requirements.
- The prosthetic hand systems operated by a combination of 12 servo motors and EMG signals.
- For more information https://fabacademy.org/2022/labs/techworks/students/amin-yousef/finalproject.html

University of Jordan, Department of Mechanical Engineering **Amman, Jordan**

Design and Fabricate Self-Configuring Modular Robot

- A self assembly robot consists of a group of similar cells (Main part), each cell has five degrees of freedom. These cells are formed according to the shape and required function. The project involved: Module Design using Creo, prototyping, control circuit and simulation using Ansys.

FAB ACADEMY, AMMAN FAB LAB "TECHWORKS" **Amman, Jordan**

Design and Fabricate Soft Robotics

- Create a soft robotics hand by designing and fabricating it through silicone casting, utilizing appropriate materials, precise 3D modeling, and prototyping. Integrate an actuation mechanism, such as the Flow IO device, to enable controlled movement and functionality.
- Flow IO Device: Utilize the MIT Media Lab-developed Flow IO device, by a PhD student, as the actuation mechanism for the soft robotics hand, providing precise and coordinated movement.
- https://fabacademy.org/2022/labs/techworks/students/amin-yousef/week17.html

FAB ACADEMY, AMMAN FAB LAB "TECHWORKS" **Amman, Jordan**

Design and Fabricate Clay forming machine

- Clay forming machine is a 4 axis CNC with rotating disc which is designed with the motive of automating the process of forming clay, the most important of which is accelerating the production process and increasing accuracy.
- https://fabacademy.org/2022/labs/techworks/students/amin-yousef/week15.html

University of Jordan, Department of Mechanical Engineering **Amman, Jordan**

Design and Foldable Home gym Machine

- The machine design involved: CAD model of the machine using SolidWorks, Finite element analysis using SolidWorks and Ansys, Design optimization to reduce the cost of production taking into consideration dynamic load and dimension requirement.

FAB ACADEMY, AMMAN FAB LAB "TECHWORKS" **Amman, Jordan**

Design Drone Structure Use Generative design

- Optimize drone structure using generative design. Refine designs for maximum performance with minimal materials.
- https://fabacademy.org/2022/labs/techworks/students/amin-yousef/week3.html#branch8

FAB ACADEMY, AMMAN FAB LAB "TECHWORKS" **Amman, Jordan**

Design and fabrication of Ameno PCB board

- The Ameno PCB board is an electrical board that utilizes the ATmega328P microcontroller, providing Arduino-like functionality.
- https://fabacademy.org/2022/labs/techworks/students/amin-yousef/FSchematics%20and%20PCBs.html

HUSSEIN TECHNICAL UNIVERSITY (HTU), HACKERSPACE **Amman, Jordan**

Design and Fabricate 3D-Printed Aircraft for 3DPAC Competition

- **Designed** a glider aircraft with a wingspan of 2.3 meters to compete in the 3D Printed Aircraft Competition at the University of Texas at Arlington (UTA).
- Achieved the **longest flight time** in the competition, demonstrating exceptional design and performance.
- Developed an innovative design that suited 3D printing technology, allowing the structure to withstand flight conditions without the use of carbon fiber rods or any other materials for support.
- Showcased unique fabrication techniques, especially in the joints, which made the assembly and disassembly process easy without requiring any glue. The design was also lightweight and optimized for performance.

AFAQ COMPANY **Amman, Jordan**

Design and Monitoring of the Manufacturing Process for Hummus Production Line

- Part of the design team responsible for creating a comprehensive hummus production line with a capacity of 1.5 tons per hour.
- Involved in both the design and monitoring of the manufacturing process to ensure efficiency and quality at each stage.
- The production line covered all essential stages of hummus production, including soaking, cooking, blending, mixing, buffering, and transferring the product between stages.
- Designed the system to deliver the product efficiently to the pasteurization line for further processing.

AFAQ COMPANY **Amman, Jordan**
Design and Monitoring of the Manufacturing Process for 3D Mixer

- **Involved in the design and monitoring of the manufacturing process for a 3D mixer, capable of mixing samples in three dimensions (horizontal, vertical, and angled rotation).**
- **The mixer is designed for versatile applications, including powder mixing, liquid blending, and other sample preparation tasks.**
- **Focused on ensuring the mixer's functionality, efficiency, and precision during the manufacturing process.**

AFAQ COMPANY **Amman, Jordan**
Design and Monitoring of the Manufacturing Process for Ointment-Cream Mixer

- **Involved in the design and oversight of the manufacturing process for an ointment-cream mixer, used in the pharmaceutical and cosmetic industries.**
- **The mixer is designed for the production of ointments, creams, lotions, gels, and toothpaste.**
- **Focused on ensuring the functionality and efficiency of the mixer to meet industry standards for product quality and production capacity.**

AFAQ COMPANY
Amman, Jordan
Design of Pharmaceutical-Grade Vacuumed Liquid Mixer

- **Engineered a pharmaceutical-grade vacuumed liquid mixer with a capacity of 2000 liters, featuring a double jacket for precise temperature control.**
- **Designed essential components including a homogenizer, heat exchanger, CIP (Clean-in-Place) system, SIP (Sterilize-in-Place), supply tank, isolation equipment, and impeller.**
- **Focused on ensuring the mixer's functionality, efficiency, and compliance with pharmaceutical industry standards.**

AFAQ COMPANY **Amman, Jordan**
Design of Pharmaceutical-Grade Liquid Mixer

- **Designed a pharmaceutical-grade liquid mixer with a double jacket for precise temperature control.**
- **Incorporated key features such as a homogenizer, heat exchanger, CIP (Clean-in-Place) system, isolation, and an impeller.**
- **Focused on optimizing the mixer's performance, efficiency, and compliance with pharmaceutical industry standards.**

Freelancer **Amman, Jordan**
Design and Fabrication of Desktop CNC Machines

- **Designed and fabricated several desktop CNC machines for various applications.**
- **Focused on optimizing machine performance, precision, and functionality while ensuring ease of use and durability.**
- **Worked with clients to tailor designs to their specific needs, delivering custom solutions with a focus on quality and efficiency.**