MOBARRAT SHAHRIAR

BASc Mechanical Engineering
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LinkedIn—Online Portfolio

SUMMARY

Over 3 years of professional experience in mechanical hardware development for various industries including automotive, consumer products, and automation. A lifelong learner and always seeking new opportunities to apply my multi-faceted skills in mechanical design, creative problem-solving, teamwork, and project management. Exceptional in modern computer-aided design software for the production of consumer goods, electronics, tools, and prototypes to meet functions and exceed objectives. Leader in every venture I take on with a great attitude for collaboration, work ethic, and mutual development.

TECHNICAL SKILLS

Product Design:	GD&T, 2D Tolerance Stack-up, Sheet Metal/Cast/Machined Component Design
Prototyping:	3D Printing, Soldering, Arduino Programming, Assembly Planning
Testing:	Auto Data Logging, Thermocouple & Thermal Chambers, Design of Experiment
CAD Software:	SolidWorks and SolidWorks PDM, CATIA, Fusion 360, OnShape
Analysis:	ANSYS, SolidWorks Motion, HyperWorks, OPTIS
Programming:	Python, MatLab, R, CATVBA, ExcelVBA, LaTex, HTML
Software:	Office Suite, Figma, Jira, Clickup, SharePoint, Canva

EXPERIENCE

Founder & CEO - MoMakers Group Sept 2022 - Present

Freelance Product Management

- Developed a comprehensive product requirements document and testing protocols to communicate and test project functions, objectives, and constraints and guide the development of a payroll management application resulting in a strong foundation for agile methodologies, **shortening project timeline by over 30%** and **cutting defect resolution time by 40%.**
- Developed and implemented a detailed product roadmap by organizing tasks, project timelines, and KPIs using **Excel** for data analysis and **Jira** for task tracking, resulting in optimized resource allocation and a **reduction in developer contracting costs by over 50%.**
- Provided UI/UX design using **Figma**, optimizing workflows for ease of use and storing & reading data, which resulted in a **30% improvement in website processing time.**

Woodyn Designs

- Procured, installed, calibrated, and maintained a **3-axis CNC machine** for cutting and engraving 4' by 8' sheets of wood up to 3 inches thick, allowing a small business to provide clients with complex custom designs in **a third of the original time estimate**.
- Conducted a **cost-benefit analysis** to evaluate the profitability of the business venture, resulting in competitive **profit margins of 60%** and breaking even within 2 months due to strategic procurement and efficient lead times.
- Marketed services on Facebook Marketplace, Etsy, and through personal networking, **engaging over 1,000 potential clients** and converting 26 into satisfied customers through professional communication and effective idea-sharing.
- **Utilized a 3D printer** to create models of client designs, build assembly aids **reducing cost by over 15%** for projects and manufacture small-scale plastic products marketed and sold via Etsy
- Delivered high-quality aesthetic decor, signage and custom furniture on time, building a loyal client base and driving business growth and providing a reliable side income.

Lead Mechanical Design Engineer Jul 2021 - Sept 2022
GASTRONOMOUS

- Led cross-functional teams in the generation, development, and launch of new autonomous food tech for Quick Service Restaurants (QSRs) to **reduce food & energy waste by over 20%** and meet in-store demand across North America.
- Translated client pain points into functions, objectives, and constraints, identifying gaps in technology and effectively communicating a vision and execution plan tailored to QSRs' needs, ensuring smooth adoption, adherence to standards, and **exceeding 100% of the clients goals**.
- Utilized **SolidWorks** to design and manage over **200 mechanical components**, including detailed engineering drawings and assembly plans for the pilot and alpha builds.
- Evaluated speed and torque requirements of motors using engineering calculations to actuate motion paths and provide technical proposals for food handling automation, resulting in an autonomous system able to produce a grilled patty, and record internal temperature, **reducing client liability by 100%**.
- Conducted structural and thermal **finite element analyses** using SolidWorks to model structural and thermal capabilities, ensuring a high-quality product and **saving the company over $50,000**.
- Worked closely with suppliers in defining requirements for food-grade mechanical & electrical components of the product ensuring a robust and maintenance-optimized machine with **twice the product life** of competitor grills and requiring **half the time to clean**.
- Identified, and **incorporated NSF specifications** in the design of commercial equipment to ensure the product will meet QSRs' food and worker safety standards ahead of the mass production stage.
- Produced **DFM and Failure Mode analyses** & applied cost-effective and reliable design choices in CAD modelling of sheet metal, cast and machined components, **minimizing lead times by over 3 months and costs of over $100,000** associated with prototyping components.
- Utilized Gantt charts in planning and delegation of tasks to accelerate the growth of a startup, leading to a **working pilot from an art concept within 4 months** in a challenging new industry.

Autopilot & Electronics Mechanical Design Engineer Sept 2019 - Aug 2020
TESLA

- Led the development, design, and testing of radar field-of-view heaters across all production-level projects **improving self-driving vision accuracy & reliability in winter climates by 60%**.
- Utilized **CATIA surfacing and part modelling** to design over **100 injection molded plastic, sheet metal, machined and 3D printed parts** that meet mechanical and aesthetic requirements.
- Conducted simulation studies using **OPTIS & CATIA** for camera field-of-view, which optimized machine learning algorithms, aesthetics, user experience, and electro-mechanical integration resulting in a **25% increase in the field of view of vehicle camera suite** and approval for intrusion detecting technology by automotive regulators in North America and the European Union.
- Calculated **RSS tolerance analysis** of mating components and communicated **GD&T** requirements on 2D drawings ensuring products can be mass-manufactured with a **defect rate less than 0.001%**
- Conducted plant visits to understand the production process and provided a creative solution to result in the elimination of a failure mode without a massive retrofit or process change, saving the company over **$200,000 yearly** and resulting in a much more satisfied customer base.

EDUCATION

University of Toronto, Faculty of Engineering Sept 2016 - Apr 2021
BASc Mechanical Engineering, Business Certificate, **CGPA: 3.62** (Deans List 2016 - 2021)
Nagoya University Summer **Automotive Intensive Program** (June 2018 - July 2018)
Project Management Essentials Certified, Professional Scrum Master Training (Ongoing)
100 Days of Python Online Udemy Course (Ongoing)