Portfolio - [Yemal Bandara | Portfolio]

Dear Hiring Team,

I am a highly skilled mechanical engineer with more than 5 years' experience in mechanical design, prototyping, manufacturing, product development, and ERP system implementation and have received multiple peer recognition awards in manufacturing for contributions to innovation and efficiency. My background in product development, coupled with hands-on expertise in precision engineering, makes me an ideal candidate for a range of engineering roles.

- I was actively involved in mechanical design and prototyping for textile machinery. I developed CAD models and optimized mechanical components to improve the efficiency by 50% and reliability of manufacturing processes.
- I have experience in Python programming and have worked on projects involving Convolutional Neural Networks (CNNs). I developed a CNN-based system for image classification and defect detection of underwater fish, leveraging deep learning algorithms to enhance automation and accuracy.
- Played a pivotal role in the development of an advanced automated solution for Rapid On-Site Evaluation (ROSE) procedures. My contributions included designing a mobile, fully automated instrument with an intuitive UI, engineering specialized consumables to minimize cross-contamination, and developing a novel specimen vial to facilitate sample homogenization 3 weeks ahead of schedule. I also optimized the integration of fresh staining solutions to ensure high-quality slide preparation. From early prototyping to full-scale manufacturing, I was deeply involved in refining mechanical components for efficiency, reliability, and ease of use.
- Worked on the Counterflow Centrifugation (CFC) system, where I was responsible for designing precision-engineered components that enable fluid-suspended cell concentration without traditional pellet formation. By optimizing centrifugal force and flow rate dynamics, I helped create a scalable solution for cell therapy applications. Additionally, I contributed to the development of single-use consumable kits, ensuring they met stringent material compatibility and sterilization requirements while enhancing process flexibility and cost efficiency by 30%.
- My experience extends to the APAS Independence system, where I supported the development of automated microbiology workflows. I played a key role in designing the structural and mechanical elements of the imaging system chamber, ensuring high-quality, reproducible image capture. My work on intelligent sorting mechanisms and high-throughput automation significantly improved lab efficiency by 30% by enabling rapid and accurate microbial analysis.
- I have contributed to the design and refinement of consumer-oriented technologies, such as the Dermapen® Microneedling system. I was involved in optimizing the mechanical performance of the pen, incorporating elastomeric spring technology for improved tensile strength and durability, and integrating a patented anti-backflow

mechanism to enhance user safety. The device met rigorous clinical standards and provided an optimal experience for end-users with over 95% customer satisfaction.

- Led the design and development of a smart backpack. This involved integrating various mechatronic components, optimizing the structural design for durability and user comfort, and implementing embedded systems for enhanced functionality. My role included rapid prototyping, testing, and refining the design to achieve a market-ready product.
- I have strong experience in programming and embedded systems, with proficiency in C, C++, C#, and Python. I have programmed microcontrollers for various applications, including automation, robotics, and sensor integration. I also have working knowledge of embedded platforms such as Arduino, Raspberry Pi, and STM32, as well as experience with PLCs and other control systems.
- Alongside my design and prototyping expertise, I have strong hands-on manufacturing experience using industrial equipment such as CNC, lathes, milling machines, sheet metal bending, guillotine and other high-risk machinery. My background includes machining and sheet metal fabrication, where I have specialized in precision manufacturing techniques to produce high-tolerance components. Additionally, I have developed Design for Manufacturing (DFM) drawings to optimize production efficiency, reduce material waste, and ensure seamless integration of machined and fabricated parts into final assemblies.
- I have experience in developing and implementing ERP systems for manufacturing resource planning (MRP) and business process optimization. I have worked on system architecture, data migration from Microsoft Dynamics 365, and integration of financials, inventory, production, purchasing, and CRM modules within ERP platforms. My role has involved training end-users, optimizing workflows, and ensuring seamless adoption of ERP solutions to improve operational efficiency by 40%.
- I hold certifications in Fundamentals of Geometric Dimensioning and Tolerancing (GD&T), Mechanical Engineering Skills IC282, and A3 PDCA Lean Problem Solving.

My passion for mechanical innovation, combined with a strong foundation in CAD modelling, precision prototyping, scalable manufacturing, product development, programming, and ERP implementation, allows me to develop groundbreaking products from concept to completion. I am eager to apply my expertise to new challenges and contribute to cutting-edge engineering solutions.

I welcome the opportunity to discuss how my skills align with your needs.
Best regards,
Yemal Bandara