

Vivek Jitendra Panchal

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Education

Master of Science in Mechanical Engineering - The University of Texas at Dallas | GPA - 3.816 (08/2018 - 05/2020)

Bachelor of Technology in Mechanical Engineering - Manipal Institute of Technology, Manipal (07/2012 - 05/2016)

Work Experience

Mechlab Innovations Pvt. Ltd. - Founder & CEO (03/2023 - Present)

- Leading a cross functional team to provide Engineered Solutions to Build Innovative Product that involves taking a product from an Idea to Market looking into the entire product life-cycle i.e. Design, Prototyping, Manufacturing, Testing and Deployment.

View Inc. - Mechanical Engineer (08/2022 - 11/2022)

- Developed new concepts for Captured/SSG Unitized as well as Stick Build Mullion structures for Curtain and Window Walls using unique features and compliant mechanisms for improved cable routing, ease of maintenance & increased modularity.
- Developed multiple control panel assemblies functionally controlling the operation of 32 IGUs.

Western Digital Corporation - Sr. Engineer, Hardware Development (10/2021 - 08/2022)

- Developed & Improved Wet Process Tools to improve yield & throughput with select changes replicated in plants worldwide.
- Worked extensively with process piping, pneumatic & PLC systems and their integration with mechanical systems across multiple tools.
- Introduced 3D Printing in the development process for prototyping as well as direct implementation in wet process tools subject to chemical resistance.
- Dealt with local and international suppliers across South East Asia for the procurement and manufacturing of different parts.
- Worked regularly with the maintenance team to debug & solve critical & recurring issues along with thorough tool documentation.

Mechanical Engineer - Talo (09/2020 - 10/2021)

- Design, Prototyping & Production of a Smart Self Brushing Toothbrush driven by a belt and gear train mechanism with three consumables - The Handle that houses the brain of the brush, the mouthpiece that houses the actuating bush heads and a wireless charging base.
- Designed & Developed the three consumables focusing on ergonomics, aesthetics and function.
- Used an iterative process using quick in-house prototyping methods such as 3D Printing (FDM & SLA), injection molding, CNC Machining.
- Carried out Integration of PCB's & other electronics components with the mechanical systems.
- Carried out additional projects like fabrication of ABS gears in house using a desktop injection molding machine wherein the Mold was printed in house on a SLA Printer using a high temp. resin.

Researcher - Humanoid, Biorobotics and Smartsystems Lab, UTD (Masters Thesis Work) (08/2018 - 03/2021)

- Developed a soft underwater jellyfish-like robot driven by thermally actuated TCP muscles (Twisted and coiled polymers) that was shown to swim vertically by a displacement of 300 mm in 320 s with potential applications in underwater exploration for commercial and environmental purposes.
- Developed another soft robot that was shown to grasp objects of varying geometries and weights varying from 2.5 g to 35 g against gravity.
- Furthermore, I carried out detailed FEM simulations to replicate the system behavior driving the above mentioned robots on Ansys Workbench.

Mechanical Engineer - Selasfora (03/2018 - 06/2018)

- Created an Engineering Solution using first principles to transform several design concepts of lifestyle products & taking it to manufacturability that involved making necessary design changes on Solidworks based on analysis & simulation results, creating manufacturing drawings, selection of the optimum materials and selecting the most suited manufacturing processes & taking the product from a design concept to market release through the entire product cycle. Furthermore, I had to design jigs & fixtures to optimize assembly procedures for manufacturers.
- Moreover I verified and validated a novel locking mechanism for the product that was then patented.

Lead Product Engineer - Sensotrack (Self Employed) (10/2017 - 02/2018)

- Developed a Smart Sensing IOT Device to pinpoint location in real time and measure ambient air temperature, pressure and relative humidity. One of the applications where these were used are Refrigerated Trucks.

Lead Product Design Engineer - Faclon Labs Pvt. Ltd. (08/2016 - 09/2017)

- Designed and Manufactured highly functional compact electrical enclosures using Injection Molding using Solidworks.
- Successfully led a multi-disciplinary cross functional team for the Complete Development of automated smart sensing IOT Devices functionally as well as aesthetically from a utility point of view along with testing, deployment and troubleshooting.
- Maintained communications between vendors, manufacturers and the internal team dealing with procurement, quotations, bill of materials etc..
- Designed dual layer PCBs using Eagle and integrated the PCB's, other electronics components with the electrical enclosures.
- Designed a fully functional system for IOT devices to work on Solar Power to provide a cost effective solution with increased reliability & serviceability.

Technical Skills

Solidworks(Advanced) | Catia(Advanced) | Autocad(Advanced) | Agile(Advanced) | Ansys Workbench(Intermediate) | Matlab & Simulink(Intermediate) | FDM 3D printing(Advanced) | SLA 3D Printing(Intermediate) | Injection Molding(Beginner) | CNC Machining(Beginner) | Wire EDM((Beginner) | Extrusion(Beginner) | ROS(Beginner) | Eagle PCB(Beginner) | Keil MDK(Beginner) | Python(Beginner) | MS Excel(Advanced) | Tracker Physics(Advanced) | Keyshot(Intermediate)

Project Experience

- Development of an economical robotic glove** for assisting post-stroke victims in carrying out activities of daily life.
- Development of a home scale self driving robotic vehicle** with a 3 DOF robotic Arm with multiple potential applications.
- Development of a Self Sufficient & Automated Home Irrigation System** driven by an Arduino Nano, a 3.7 V Li-ion Battery and a 2.5 W Solar Panel.
- Development of Ear Plugs** with a multi-layered structure for maximum noise reduction.

Patents & Publications

Title: Embedded TCP Actuators in Silicone for Grasping Applications and Underwater Soft Robots(In process of being published)

Description: As part of my MS Thesis, I developed a soft underwater robot driven by recently invented thermally actuated artificial muscles which was shown to swim by a vertical displacement of 300 mm in 320s and developed a similar robot for grasping objects of varying shapes, sizes and weights in air and in water.

Title: Compliant Wrench (Awaiting Approval)

Description: The present invention relates to a single part adjustable wrench that uses the concept of elastic body deformation for the transmission of applied force and is customizable and scalable by design such that it can be used to accurately fasten a large range of nuts and bolts.