

Afroz Mohammed

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Product Design | CAD | Prototyping | Testing | Troubleshooting | Manufacturing | Analysis | Programming

Overview

- A young and motivated mechanical engineer with product development experience in robotics and automotive.
- Collaborated with engineering teams to translate ideas into mechanical prototypes and advance them into manufacturing.

Skills

Engineering	New product development, product design, rapid prototyping & DFMA.
Quality Testing	Testing, troubleshooting, test fixture development, Gage R&R & Design of Experiments.
CAD software	SolidWorks, AutoCAD & PTC Creo.
Programming	MATLAB, Python, Minitab, Arduino, C++, ROS & OpenCV.
Certifications	Design for Manufacturing and Assembly

Professional Experience

SharkNinja Operating LLC, Needham, MA

SharkNinja is a global manufacturer of household vacuum cleaners with the brand name Shark. It makes kitchen appliances and other housewares with the brand name Ninja.

Mechanical Engineer – Robotics

Nov. 2020 - Nov. 2021

- Collaborated with cross-functional teams including quality, testing, engineering, and global R&D, to design and develop robot vacuums, conducted feasibility studies, and tested hardware designs.
- Designed and created subsystem prototypes using Solidworks and performed DOE to optimize product performance.
- Ensured product met design and functional requirements in manufacturing processes and achieving KPI respectively.
- Evaluated components selection such as suction motor and brush roll designs based on cost, power, and performance metrics.
- Diagnosed mechanical performance issues/failures on consumer-returned units and shared critical findings across teams.
- Identified cost savings opportunities on parts and materials for product upgrades.

Mechanical Engineer Intern – Quality Testing (Robotics)

Jan. 2019 – Aug. 2019 | Aug. 2020 - Nov. 2020

- Researched and built test fixtures for Shark's line of robot vacuums.
- Analyzed product failures reported by consumers to develop new test protocols.
- Executed test plans in timely manner and shared feedback on builds for product launch.
- Performed root cause analysis of robot vacuums and implemented learnings for test protocol development.

VE Commercial Vehicle Ltd., Bangalore, India

A joint venture between the Volvo Group and Eicher Motors Limited. It manufactures and distributes Volvo and Eicher trucks in India.

Field Engineer, Volvo Trucks India

July 2015 - Sept. 2016

- Performed hands-on analysis of vehicle aggregates (engine, gearbox, and differential axle) & components for fault-diagnosis.
- Provided technical assistance to technicians on sites, in the operation and maintenance of about 30 heavy-duty trucks.
- Provided timely input to customers (fleet owners) on better operating & maintenance practices of trucks to reduce maintenance costs and maximize vehicle performance.

Northeastern University, Boston, MA

Intramural Sports Official

July 2018 – Apr. 2020

- Organized and managed over 100 intramural sporting events.

Teaching Assistant, Statics (ME2350)

Sept. 2018 – Dec. 2018 | Sept. 2019 – Dec. 2019

- Reviewed undergraduate students' assignments and projects.

Graduate Student Assistant

May 2018 - July 2018

- Renovated autonomous underwater vehicles(AUV) for field testing and collected test data for tuning operational parameters.

Education

Northeastern University, Boston, MA

Master of Science in Mechanical Engineering, Concentration in Mechatronics

May 2020

Courses: Mechatronic Systems, Dynamics & Mechanical Vibration, Robot Mechanics and Control, Control Systems Engineering, Robot Sensing & Navigation, Digital Signal Processing, Computer Vision, and Assistive Robotics.

Kalinga Institute of Industrial Technology, Bhubaneswar, India

Bachelor of Technology in Mechanical Engineering

April 2015

Projects

Non-conventional automated debris evacuation system for Shark robot vacuums

- Designed and prototyped an automated debris evacuation system with reduced cost and noise level than a conventional one.
- Debris is evacuated from the robot vacuum's dust cup using mechanical components instead of a suction motor.

Human gait analysis using a camera and IMU

- Developed an affordable method for early detection of musculoskeletal disorders using a video of person walking.
- Gait defining parameters such as body poses, and joint angle progression is extracted using computer visions tools.
- Extraction of gait parameters is validated using inertial measurement sensors mounted on limbs.

Comparison of mechanical and electromechanical suspension systems

- Modelled and simulated hydraulic and magnetorheological vehicle suspension systems for various road profiles in MATLAB.
- Compared suspension systems for damping effects, comfort, and handling abilities of the vehicle.

Tunnel Navigation System

- Estimation of a vehicle's location in tunnels and areas of low GPS reception with the vehicle's built-in encoder (wheel speed sensor) and an external GPS and IMU.