Afroz Khan Mohammed

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Education

Northeastern University, Boston, MA   Apr. 2020
Master of Science in Mechanical Engineering, Concentration in Mechatronics
Courses: Digital Signal Processing, Modern Signal Processing, Assistive Robotics, Mechatronics Systems, Computer Vision, Machine Learning and Pattern Recognition, Robot Sensing and Navigation, Robot Mechanics and Control, Control Systems Engineering, and Dynamics and Mechanical Vibration.
Activities: Intramural Sports Official, Teaching Assistant – Statics (ME-2350)

Kalinga Institute of Industrial Technology, Bhubaneswar, OR   July 2015
Bachelor of Technology in Mechanical Engineering
Activities: Varsity team basketball player (runner-up at 'All India Central Zone University Basketball' tournament 2013)

Professional Experience

SharkNinja Operating LLC, Needham, MA   Jan. 2019-Aug. 2019
Product Development, Mechanical Engineer Coop
- Developed test methods involving design of test fixture, use of programming languages and machine shop operations.
- Tested prototypes of robotic vacuum cleaner for operational performance.
- Performed root cause analysis and communicated critical data across teams.
- Analyzed consumer surveys and insights to optimize test data and used them to generate test protocols.
- Performed verification and validation activities of test protocols.

Volvo Trucks India, Bangalore, India   July 2015-Sept. 2016
Site Engineer
- Performed hands-on analysis of vehicle aggregates such as engine, gearbox, and differential axle.
- Ensured availability of trained manpower and adequate infrastructure at sites.
- Adhered to site process such as preventive maintenance, fleet upkeep and availability of parts.
- Provided timely input to customers on better operating & maintenance practices of trucks, therefore reducing the maintenance cost and fuel consumption.

Field Robotics Lab, Northeastern University, Boston, MA   May 2018-Jun.2018
Graduate Student Assistant
- Reconditioned and tested under-water vehicle used for exploring seabed.
- Gained exposure to ROS-based system software architecture of autonomous vehicles.

Projects

Human Gait Analysis using inertial measurement and optical sensors - Assistive Robotics (EECE – 5552) (2019)
- Calculated joint angle progression between shank and knee for a human walk motion, by fusing accelerometer and gyroscope data from a pair of inertial measurement sensors mounted on the limbs.
- Obtained lower body joint angles from a video with the help of a human pose estimation package and used it to generate Gillette Gait Index, as a summary for gait analysis.

Comparison and Modelling of vehicle suspension systems – Mechatronics Systems (ME-5245) (2019)
- Modelled and compared hydraulic and magnetorheological vehicle suspension systems for various road profiles in MATLAB.

Automated test data collection and its processing for robotic vacuums, SharkNinja Operating LLC
- Tracked robot's position coordinates from videos using a neural network and used them as pass/fail criteria for various tests with a 98% of accuracy.

Skills

Languages: C++, Python & Arduino.
Packages: OpenCV, ROS & CUDA (beginner).
Software: MATLAB, Minitab & MS Office.
System: Linux
Hands-on: Autonomous underwater vehicle & advanced repair of heavy-duty off-road trucks.