HEMAN

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Interests

Robot Design, Product Development, Path Planning, Computer Vision, Machine Learning.

Education

Master's in Robotics, Automation, and Mechatronics Sept 2023-Present
University of California, Riverside
Major: Robotics, Focus: Artificial Intelligence and Perception

Bachelor of Technology in Mechanical Engineering Jul 2017-Jul 2021
Maharshi Dayanand University, India

Relevant Coursework:

Foundation of Robotics, Computational method for Robotics, Fundamentals of Machine learning, Advanced Computer vision, Trustworthy Artificial Intelligence, Linear Control system, Design and Fabrication of Robots, Advance computer vision.

Experience

EFEV Charging Solutions Pvt Ltd., Sonipat, India Dec 2022 - Sept 2023
Design Engineer (Research and Development Department)

- Designed and helped in the production of three-wheeler electric vehicles and ensured that the product complied with international design standards; also managed the bill of materials.
- Collaborated with the New Product Development team to select materials and optimize the product design for cost-effective manufacturing.

Moog Advance Systems Pvt. Ltd., Gurguram, India Mar 2022 - Nov 2022
Mechanical Design Engineer (Research and Development Department)

- Designed and developed parts of armored vehicles, steering assemblies, and military weapons.
- Prepared detailed production drawings for fabrication and machining.

Greenvolt Mobility LLP, Ahmedabad, India June 2021 - Nov 2021
Mechanical Engineer Intern (Research and Development Department)

- Designed a data collection device to gather data about driving scenarios on Indian roads that can be used to train autonomous vehicles.
- Designed a testing system for Electric Vehicles to accurately measure the performance of the motor, controller, and battery pack.
- Worked on the design of a telescopic suspension system to improve the performance and ergonomics of a two-wheeler vehicle.

Honda Two-Wheeler Pvt. Ltd., Manesar, India June 2019- July 2019
Trainee

- Inspected wiring harnesses in Honda Shine (15cc), Honda CBR150, and Hornet vehicles.
- Inspected the manual assembly of African Twin, Honda Activa, and Honda Shine (15cc) engine assembly.

Projects

Surgical Robot:
University of California, Riverside

Guidance: Professor Jun sheng, Professor Mingyu cai

- Under the guidance of Professor Jun sheng and Mingyu cai, initiated a research project focused on the development of surgical robots. At the very first stage developing the tissue cutting process. We are using KINOVA 7 dof 3gen lite robotic arm. This project is aimed at acquiring practical experience in the areas of robotics, mechanical design, and software development for robotic systems.

Sensor Development

University of California, Riverside

Guidance: Professor Jun sheng

- Under the guidance of Professor Jun sheng, initiated a research project focused on the development of sensors to measure resistance with respect to change in length for soft robot. This project is aimed at acquiring practical experience in the areas of robotics, mechanical design, and software development for robotic systems.

Quadruped Robot (Project)

University of California, Riverside

- Developing a 4-legged rigid robot capable of dynamic movement, transition seamlessly between quadrupedal and bipedal locomotion modes.

Real-time Driver Behavior Detection (Class Project)

University of California, Riverside

- Developed a system that can determine if a driver is paying attention while driving or not. When the system notices these actions, it is able to step in and help with the driver's focus.
- Developed algorithms to enable immediate reaction to dangerous driving behaviors by sending out alarms and feedback in real-time.

4-DOF Robotic Arm Design and Kinematics Implementation Project

University of California, Riverside

- Designed and built a 4-degree-of-freedom robotic arm from scratch
- Implemented forward, inverse, and velocity kinematics algorithms from scratch for precise control of the arm's motion.

Fabrication of FDM 3D Printer

Maharshi Dayanand University, India

Guidance: Dr. Deepak Chhabra

- Various raw materials, including ABS, PLA, PETG, NYLON, HDPE, PC, PP, and others, were combined with ingredients and nanofibers to enhance their mechanical properties for thermoplastic filament production. The process parameters were optimized for maximum efficiency and performance, considering the thermodynamics to maintain optimal temperature and pressure conditions. This resulted in high-quality thermoplastic filaments with superior mechanical properties.

SKILLS

Software Skills

Solidworks, Autocad, Autodesk Fusion, Key Shots, Cura, Ansys, Catia, Creo, CARLA, Gazebo, Riviz, FEA

Programming Skills

Python, HTML, C++, Ros, Java, CSS, Matlab, Arduino programming, DevOps tools (docker, git, AWS, jenkins), CNC-G Code, Latex.

Operating systems

Linux, Windows, Rassberrypi

Technical Skills

Welding, Lathe Machine, Sheet Metal, CNC Machine, 3d-printer, DFA, DFM, GD&T, Engineering-BOM, Manufacturing-BOM

EXTRACURRICULAR ACTIVITIES

Bachelor's degree

Maharshi Dayanand University, Rohtak

- Secured 1st position in Hackathon organized by CipherSchools on 9th August 2020.
- Secured 2nd position in a science competition organized by the Department of Environment of Science.
- Secured 1st position in 2017 and 3rd position in 2019 in the inter-college badminton championships.