Pratik Sonar

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Education

SRH Berlin University of Applied Sciences, Berlin, Germany, April 2024 – Present

M.Eng.Engineering and Sustainable technology management

- Focus Area: Industry 4.0, Robotics and Automation and 3D manufacturing
- **Coursework:** AI & Automation, Sustainable Tech Management, Digital Engineering & Manufacturing

All India Shri Shivaji Memorial Society,College of Engineering,Pune,India, August 2018 – May 2023

Bachelors in Production Engineering

- Focus Area: Manufacturing & Production Systems, Design & Industrial Engineering & Management & Practical Training Internships

Experience

Robotics Engineer, iTech Robotics Automation Pvt.Ltd, Chakan, Maharashtra, India, R&D Intern July 2021 – Dec 2021

- Enhanced robot vision capabilities for SCARA robot by implementing real-time image processing using OpenCV in Python.
- Simulated SCARA robot's work envelope and motion paths using ABB RobotStudio to optimize workspace utilization.
- Automated 3D printer operations by integrating.Raspberry Pi with OctoPrint, enabling remote control and monitoring.

Production Engineer, Udyog Engineering, Pune/Pimpri- Chinchwad Area,India, Production Engineer Intern Feb 2023 – July 2023

- Designed and conducted CFD analysis of a centrifugal water pump using SolidWorks to improve flow efficiency and performance.
- Developed optimized plant layout designs to streamline operations and minimize material handling time.
- Performed cost analysis of Goliath Crane components to identify savings opportunities in material and fabrication.
- Engineered an acid pump design focused on durability and corrosion resistance for chemical handling applications.

Quality Control Engineer,Goodluck Technomech Pvt. Ltd. Quality Control and Production Intern July 2023 - December 2023

- Interpreted technical drawings to support precise manufacturing and quality checks.
- Utilized precision instruments (e.g., vernier calipers, micrometers) to verify dimensional accuracy.
- Prepared PDIRs and conducted component inspections, ensuring compliance with engineering standards.
- Assisted in dispatch processes, including anti-corrosion treatments and packaging under expert supervision.

Projects

IoT-Based 5-Axis Industrial Robot (Robotics & Automation)

- Designed and 3D printed a 5-axis robotic arm controlled via a custom Android app built with MIT App Inventor
- Automated repetitive tasks through IoT integration, eliminating the need for a traditional teach pendant and improving operational safety

Walking Humanoid Robot (Robotics Workshop)

- Built an Arduino-based biped robot and programmed basic walking motions within a 2-day robotics workshop.

- Gained hands-on experience in motion control, mechanical design, and rapid prototyping.

Automation of 3D Printer using Raspberry Pi and OctoPrint (IoT Project)

- Configured Raspberry Pi and OctoPrint to enable wireless control and real-time monitoring of 3D print jobs.
- Improved printing efficiency and remote troubleshooting capabilities through automation.

Simulation of Work Envelope using ABB RobotStudio (Design & Simulation)

- Simulated SCARA robot motion paths and workspace coverage using ABB RobotStudio.
- Validated design constraints and optimized robotic movement within a defined work cell.

Image Processing for Robot Vision using OpenCV (Programming Project)

- Implemented object detection and visual tracking using Python and OpenCV for SCARA robot vision.
- Enhanced robotic perception to enable interaction with dynamic environments.

Design and CFD Analysis of a Centrifugal Water Pump (CAD & Simulation)

- Modeled a centrifugal pump in SolidWorks and conducted CFD analysis to optimize fluid flow and pressure distribution.
- Improved pump efficiency by analyzing performance under different operational conditions

Waste Segregation Using OpenCV for Robot Vision System

- Developed an image processing system using OpenCV in Python to classify and segregate waste based on visual characteristics.
- Enabled automation of waste handling by integrating object detection with a robotic arm for efficient and eco-friendly sorting

Technologies

Languages: Python, C, C++, Embedded C, Java, JavaScript, SQL.

Technologies: IoT, OpenCV (Computer Vision), MIT App Inventor, Arduino, OctoPrint, Raspberry Pi, CFD (Computational Fluid Dynamics), SolidWorks, ABB RobotStudio, AutoCAD, Microsoft SQL Server, Xcode, Interface Builder, Precision Instruments (Vernier Caliper, Micrometer), Excel (Cost Analysis, Engineering Economics).

Speaking Language Proficiency: English (C1 – Advanced), German (A2 – Elementary).

Certifications

Lean Six Sigma Yellow Belt – Certified in process improvement and quality management methodologies.

Developing Soft Skills and Personality – NPTEL course focused on communication, teamwork, and professional behavior.

Siemens Mechatronic Systems Certification Program – Assistant Level – Certified in integrated mechatronic systems and automation technologies.

IELTS – Overall Band Score: 7 – Proficient in English (C1 Level) as per international language standards.

Computational Fluid Dynamics: Applications and Opportunities – Introduction to CFD tools, applications, and industry relevance.