SHIVAM BHARDWAJ

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SUMMARY

Senior AI-Augmented Robotics & Automation Engineer with 6+ years bridging Mechanical Design (Siemens NX), Software (Python/ROS), and Operations. Specialist in **"AI-Accelerated Engineering"**—leveraging LLMs and modern AI stacks to rapidly deploy full-stack automation tools, reducing development cycles from weeks to days. Proven track record of delivering critical hardware for **Meta, Applied Materials, Amazon Robotics, and Saildrone**.

TECHNICAL SKILLS

AI & Software: Python, C++, ROS/ROS2, LLM Workflow Integration, Computer Vision (OpenCV, YOLO), Sensor Fusion, GIT, Jira.
Hardware & CAD: Siemens NX (Open API), SolidWorks, Rhino3D, GD&T, Rapid Prototyping, Wiring & Harnessing.
Automation: Industrial IoT, PLC (Beckhoff), 5S Methodology, ERP Integration, LabView.

PROFESSIONAL EXPERIENCE

Mechatronics Engineer | Design Visionaries (Contractor)
Mar 2023 – Present

Clients: Applied Materials, Saildrone, Metal Recycling | San Jose, CA

- **Applied Materials (AutoCrate):** Architected a web-based parametric design engine for ASTM-standard crates, enabling instant download of NX expressions for template import. Reduced design time from **2 days to <1 hour**, significantly improving custom crate adoption and achieving a **100x speedup** over NX Open.
- **Applied Materials (Full-Stack):** Built an intuitive GUI allowing non-technical staff to generate ASTM-compliant manufacturing drawings automatically, eliminating engineering bottlenecks.
- **Saildrone (Operations):** Deployed to the harnessing department to restructure failing workflows. Implemented **5S Methodology**, resulting in a measurable increase in production throughput and safety compliance.
- **Saildrone (ERP & RMA):** Overhauled the RMA process and boosted ERP implementation accuracy, reducing inventory discrepancies and streamlining the feedback loop between manufacturing and design.
- **Metal Recycling (Industrial IoT):** Designed and deployed a laser metrology system (0.02” accuracy) integrated with cloud ERPs to automate weighing and material classification.

Engineering Manager | Advanced Engineering Services (Contractor)
Sep 2022 – Mar 2023

Clients: Meta (Facebook) & Applied Materials | San Jose, CA

- **Meta (Forensic Robotics):** Led the design and build of a forensic analysis workcell to detect counterfeit components in VR/AR hardware supply chains.
- **Meta (System Integration):** Integrated a **DoBot CR5** cobot with RF sensors, thermal imaging, and high-res optical cameras to perform automated anomaly detection.
- **Applied Materials (AR Prototyping):** Managed the industrial design (Rhino3D) and fabrication of next-gen **AR Glasses** (Light Engine & Waveguide), delivering the first functional prototype to leadership.

Senior Robotics Engineer | Velodyne Lidar
Jan 2021 – Sep 2022

R&D Software Team Lead | San Jose, CA

- **Amazon Scout Partnership:** Designed and fabricated early-stage sensor fusion rigs specifically for the **Amazon Scout** delivery robot, enabling critical perception data collection.
- **Data Collection (IEAB):** Led data collection operations for International Emergency Autonomous Braking (IEAB) testing at the AAA Concord GoMentum Station.
- **Fleet Management:** Managed a fleet of 5 autonomous research vehicles. Developed C++ scripts for PTP time synchronization between LiDARs and embedded IMUs, directly improving the Vella vision stack.

Robotics Software Engineer | Monogram Orthopedics (ARI)
Jan 2020 – Dec 2020

- **Surgical Navigation:** Developed the core registration algorithm to locate bone structures relative to a **Kuka Robot** (Accuracy: <1mm, Latency: <2s) using OptiTrack.
- **Medical Device Compliance:** Integrated algorithms via **DDS & Protobufs**; executed Hardware-in-the-Loop (HIL) testing and generated FDA-compliant traceability matrices.

EDUCATION

Master of Science in Mechatronics & Robotics
New York University (NYU)

Research: AI4CE Lab – Real-time visual localization using Deep Learning (SLAM without GPS).

Bachelor of Technology in Electronics
I.P. University, Delhi

Award: Top 3 University Projects – Developed an ArduPilot-based Autonomous Drone.