Shruti Mahajan

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SUMMARY

Detail-oriented Electrical Engineer with 3+ years of experience in semiconductor fabrication, MEMS and process optimization in cleanroom and manufacturing environments. **Certified Lean Six Sigma Green Belt** with proven track record of reducing cycle times, implementing lean methodologies, and driving continuous improvement.

EDUCATION

Master of Science in Electrical Engineering *May 2025*
University of Cincinnati (UC) *GPA: 3.96/4.0*

Bachelor of Engineering in Electronics & Telecommunication *June 2022*
Savitribai Phule Pune University (SPPU) *GPA: 3.86/4.0*

WORK EXPERIENCE

Graduate Teaching Assistant – Microfabrication Lab (Clean Room) *Cincinnati, Ohio*
University of Cincinnati *Jan. 2023 – Apr. 2025*

- Instructed students on microfabrication process flows (photolithography, etching, PVD, bonding etc.) to fabricate MEMS pressure sensors in an 8000+ sq.ft cleanroom facility encompassing **ISO Class 10 to Class 10,000** environments.
- Trained students on cleanroom equipment use and troubleshooting ensuring compliance with OSHA safety standards and protocols.

Manufacturing Engineer Intern *Cincinnati, Ohio*
Schneider Electric *Aug. 2024 – Dec. 2024*

- Spearheaded continuous process improvement resulting in **50%** reduction in cycle time through standardized work instructions, time studies, root cause analysis and statistical process control.
- Collaborated on cross-functional teams for product design optimization, resulting in reduction in assembly complexity
- Implemented lean methodologies and AI-driven smart factory strategies to enhance operational efficiency and reduced lead times.
- Led 5S and Kaizen initiatives in a **100,000 sq. ft**. facility, boosting efficiency by **20%** with zero safety incidents in 4 months.

Graduate Trainee Intern *India*
Rishabh Instruments *Aug. 2021 – Sept. 2021*

- Assisted with PCB design in Eagle, assembled and soldered components, tested for functionality and documented results.
- Collaborated with product development team to design and evaluate test instruments and industrial control products.

PROJECTS

Design and Packaging of Implantable Biomedical Device for Osteoarthritis Monitoring *Present - UC*

- Engineered passive, wireless, implantable biosensor using micro EDM for in vivo fluid analysis in OA patients.
- Designed the mold in SolidWorks and machined it using **CNC machining** to fabricate a micro scale biocompatible polymer package with integrated Nitinol anchors for sensor-enclosed deployment.
- Developed comprehensive process flow to seamlessly integrate the sensor and package, ensuring functionality and performance.

Development of a Microfluidic Viscometer for Biomedical Fluid Analysis *Fall'23- UC*

- Developed novel cost-effective viscometer for small sample volumes (~3 mL) using microfluidic principles.
- Optimized device design using **COMSOL** simulations and syringe pump integration for reliable, repeatable measurements

Clean Room Fabrication of Silicon Pressure Sensors *Spring'23 - UC*

- Fabricated MEMS pressure sensors on 2" n-type silicon wafers using cleanroom-based microfabrication techniques.
- Achieved **90%** sensor accuracy via precise resistance and voltage characterization.

Chip Design and Verification *Fall'22 - UC*

- Designed a **40-pin** integrated circuit for string-matching, coding logic in VHDL using Xilinx & Modelsim. verifying functionality in
- Verified functionality in HSPICE/IRSIM and developed full custom CMOS layout using **Magic**, ensuring compliance with design rules

Smart Electric Vehicle Charging Station *Fall'21 - SPPU*

- Designed an automated EV charging station with HMI and payment integration, simulating scalable smart manufacturing.
- Programmed a reliable and responsive PLC-based control system with sensor integration for real-time charge monitoring.

SKILLS & CERTIFICATIONS

- **Technical skills:** Semiconductor Fabrication Techniques, Process Development, Cleanroom Protocols, Product Design & Development, Manufacturing, Packaging & Assembly, MEMS, Sensor Design & Integration
- **Fabrication:** Micro-EDM, 3D Printing, Polymer Molding & Casting, Electropolishing, Dip Coating
- **Characterization Tools:** SEM, Optical Microscopy, X-ray, Surface Profilometry
- **Process Engineering:** Lean Six Sigma (Green Belt), DOE, SPC, RCA, FMEA, 5S, 5Y, VSM
- **Software/Tools:** SolidWorks, AutoCAD, JMP, COMSOL, NI Multisim, Eagle, MATLAB, Magic, HSPICE, IRSIM, MS Office Suite
- **Programming languages:** G-Code, C, C++, VHDL, Assembly Language
- **Certifications:** Lean Six Sigma Green Belt, Introduction to 5S, OASiS Rapid Certification in Semiconductors Program