

**Senior Mechanical Engineering Manager experienced in Robotics, Consumer Electronics, and Medical Devices**

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**Summary of Engineering and Technical Competencies**

- **Product Development** – product definition, mechanical design, execution, design review & documentation
- **Product Lifecycle** – ideation, manufacturing methodology, productivity & sustaining, problem-solving
- **Process & Quality** – design controls, risk management, regulation verification, quality engineering, safety
- **Robotics** – robotic arms, mechatronics, mobility, integrated sensor and camera subsystems, OR environment
- **Medical and Regulatory** – IEC 60601, FMEA, 21 CFR, BioCompatibility, sterile environments, operating rooms

**Product Experience:** electronics, sensor design, controllers, hardware design, robotics, automation, Bluetooth

**Prototyping Experience:** ultrasonic welding plastic, metal, test development, basic machine shop tools, 3D prototyping

**Technical Competencies:**

- Advanced SolidWorks User
- NX with TeamCenter PLM
- Finite Element Analysis (FEA)
- Risk, Hazard Analysis, and DFMEA
- Surface Modeling
- Arduino
- Geometric Tolerancing (ANSI Y 14.5) [GD&T]
- Python, Data Analysis, MATLAB
- Project Management, Budgeting, & Resourcing
- Manufacturing Support and Development
- CREO with Windchill
- Electronics Manufacturing (PCBA, IP54, IP67)

**Work Experience**

**Vicarious Surgical, Waltham, MA**

***Sr Manager-Mechanical Engineering, Camera Technical Lead***

7/24 to Current

- Managing and mentoring a team of up to **8 Mechanical Engineers** from Co-Op to Technical Leads and Manager of Offshore Team of 10 Full Time Engineers for Capital Equipment (Patient Cart and Surgeon Console) and Disposables (Monopolar Cautery Scissors, Needle Drivers, and Trocar/Drapes)
- Program and Engineering leadership spanning Mechanical Engineers, Electrical Engineers, and V&V Engineers
- Leading Advanced Manufacturing activities with Testing and Build Plans, Work Instructions, and Support
- Leading Design and Verification/Validation Activities for the Multi-Axis Laparoscopic Camera System like Sterility, Accelerated Aging, ASTM D4169 Transit and Packaging Testing, IP, Cytotoxicity, and IEC 60601.
- Lead a revamp of the System and SubSystem User Needs, Requirements, and Test Plans. (Completed)
- Updated DFMEA and Risk Controls for the System and Subsystem Level.
- Coordinated with Clinical Engineering to execute Syndaver, Cadaver, and Porcine Labs testing the System performance, protocol, and furthering user need and requirements refinement.
- Leading a team prototyping and evaluating User Needs, Patient Safety, and Delivery of Monopolar Cautery Scissors.
- Designed Plastic and Metal Injection Parts for **50+% Cost Savings**, increasing Manufacturing Capacity, and Delivery.
- Established team culture and achieved **100%** retention rate for my team across **3 company-wide RIFs** based on objective measures of team success and productivity on the company-wide project plan.
- Delivered Accurate Integrated Project Plans to CEO organizing electrical, software, operations, quality and systems, setting a date and priorities to begin clinical trials that includes the patient cart, surgical console and disposables.

**iRobot, Bedford, MA**

***Principal Mechanical Engineer, Front End Innovation Group***

3/22 to 3/24

- Released a new-to-market, next-generation robotic dock for Fall 2023 launch. Available for purchase on Amazon with updated High Voltage and control PCBAs in an IP54 Rated enclosure.

- Completed development of 2 new robotic floor care docks with expanded capabilities, including autonomous sensor alignment, visual identification and robotic mobility features to enable auto evacuation, charging and updating, for a cheaper price. Designed docks for future integration of Bluetooth, USB charging, and Alexa.
- Innovated and integrated 3 new sub-systems for Roomba docks by evaluating consumer personas and market data that will now become standard for all 2 in-one Roomba combos released in the future
- Finished robotic lawnmower rated for outdoor climate. Completed mobility testing, sensor integration, and design and safety evaluation. Ready for tooling.
- Added new features to the Clean Base Autofill dock, **lowering costs by 10% while enabling a 40% profit margin.**

## **Capgemini, Burlington, MA**

### **ASML(Semiconductor Capital Equipment), Wilton, CT**

#### ***Principal Mechanical Engineer (long-term consulting for Capgemini)***

8/2018-2/22

- Designed and integrated sensors for fast-moving reticle lithography equipment to build capital equipment that produced EUV semiconductors during Pandemic chip shortage (emerging tech/ITAR).
- Mechanical, Vacuum, and Electrical design for the Reticle handler, holding and exchanging optical trace patterns for writing on Silicon wafers.

## **Keurig Dr Pepper (Consumer Electronics), Burlington, MA**

### ***Sr. Mechanical Engineer (long-term consulting for Capgemini)***

8/2018-6/2019

- Conceived comprehensive design validation tests (DFMEA, DVP) for at-home brewers using non-linear FEA analysis to that allowed Keurig to release flagship K-Supreme brewer for the 2021 Christmas retail season.
- Created automated Arduino test that saved 3 months in manual testing and technician time.
- Released compostable and recyclable coffee pods for 100% of Keurig SKUs, answering environmental complaints.

### **Miscellaneous Engagements (Capgemini)**

- AGV (autonomous guided vehicles) : Created modeling & simulation tool for automated guided vehicles used in warehouses (speeds, stopping distance and compliance), resulting in **3 additional consulting engagements.**
- Managed 15 offshore Capgemini engineers to deliver 5 projects worth \$2M to contract specifications & on-time.

## **TELEDYNE FLIR Systems, Nashua, NH**

### ***Senior Mechanical Engineer***

7/2015-12/2017

- Developed professional and consumer-grade electrical & moisture measuring equipment for recognition and diagnostic activities in construction & engineering utilizing various sensing, infrared & visual imaging technologies
- Led product life cycles from ideation to launch, manufacturing and shipment & support.
  - o VS290 Professional Grade Endoscope for Electrical and Mechanical Inspection (IP and Drop Rated)
  - o MR55 Pin-Based Moisture Meter with Bluetooth and mobile application integration (4.3 stars Amazon)
  - o FLIR CM4X Electrical Clamp Family (3 SKUs, 4.2 stars on Amazon across SKUs)
- Managed 2 CMs, ensuring ISO, part & process compliance. Delivered products to required specifications and manufacturing schedule. Also, consolidated 4 CMs into 2, lowering operating costs by 10%.

## **OSRAM Sylvania, Danvers, MA**

### ***Senior Mechanical Engineer***

2011-2014

- Awarded **5 patents** for innovative product design in the production of professional lighting products.
- Collaborated with interdisciplinary team to develop complex optical lens & mechanical parts using SolidWorks to create lighting that met Energy Star standards,
- Conceived & documented design validation tests (DFMEA) for lighting products for energy efficient lighting at SEATAC airport parking lot that cut the client's maintenance and energy costs by 50% (see [mattcparker.pro](http://mattcparker.pro) for case study).

## **Education and Certification**

**Georgia Institute of Technology, Atlanta, GA**

**B.S. in Mechanical Engineering,**

December 2003