

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

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) *incl.* SW Simulation
- DFMEA
- Surface Modeling
- Arduino
- Geometric Tolerancing (ANSI Y 14.5) [GD&T]
- Python (certified by G.I.T), Data Analysis, MATLAB
- Project Management & Budgetting
- 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

7/2024 to Current

- Managing 8 Mechanical Engineers from Co-Op to Technical Leads for Capital Equipment (Patient Cart and Surgeon Console) and Disposables (Monopolar Cautery Scissors, Needle Drivers, and Trocar/Drapes)
- Leading Design and Design Validation Activities for Multi-Axis Laparoscopic Camera System with Closed Loop Sensing
- Designed Multi-Axis Robotic Arms with Inductive Sensing with Surgical End Effectors mimicking Human Movement
- 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
- Project Scheduling and Resource Planning for delivery of Camera Subsystem from Prototype to Design Verification
- Delivered 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

Third Pole Therapeutics, Waltham MA

Principal Mechanical Engineer

3/2024 to 6/2024

- Innovated novel hot gas cooling manifold using printed metal and cast components for pneumatic gas systems
- Prototyped and Designed High Voltage Plasma enclosures for Plasma Generation
- Document and Quality Control Management for FDA

iRobot, Bedford MA

Principal Mechanical Engineer, Front End Innovation Group

3/2022 to 3/2024

- 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) 8/2018-2/2022

- 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. Products and ratings are provided on my website at mattcparker.pro
 - 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)
 - o MR40 Moisture Pen (low-cost consumer alternative) (4.4 stars on Amazon)
 - o MR59 Remote Pin Less Moisture Probes (4.2 stars on Amazon)
- 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 client's maintenance and energy costs by 50% (see mattcparker.pro for case study).

Education and Certification

Georgia Institute of Technology, Atlanta, GA

B.S. of Mechanical Engineering

December 2003