MATT C. PARKER

Senior Mechanical Engineering Leader · Surgical Robotics & Medical Devices

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PROFESSIONAL SUMMARY

Mechanical engineering leader with 15+ years driving surgical robotics, electromechanical platforms, and regulated medical devices from concept to commercialization. Deep expertise in FDA 21 CFR Part 820 design controls, ISO 14971 risk management, IEC 60601 compliance, and full V&V program ownership. Consistent record of reducing cost, compressing timelines, and leading cross-functional teams to deliver precision systems that meet clinical, regulatory, and manufacturing requirements.

CORE COMPETENCIES

Surgical Robotics Development • Electromechanical System Design • Medical Device V&V
FDA 21 CFR Part 820 Design Controls • ISO 14971 Risk Management • IEC 60601 Compliance
DFMEA / DVP&R • Design for Manufacturability • Manufacturing Transfer
Cross-Functional Team Leadership • Precision Mechanical Systems • Disposable Instrument Design

PROFESSIONAL EXPERIENCE

Senior Manager, Mechanical Engineering — Camera Technical Lead

2024 – Present

Vicarious Surgical • Waltham, MA

- Lead mechanical engineering of next-generation robotic surgical system — patient cart, surgeon console, and disposable instruments — managing a team of 9 engineers (8 MEs from Principal to Co-op level, plus 1 V&V engineer) and overseeing an offshore India team of 10 through a dedicated office manager.
- Drove camera system component redesign that reduced COGS from $4,800 to $1,600 per unit — a 67% cost reduction — through DFM-focused redesign of injection-molded and machined parts.
- Own end-to-end V&V program for multi-axis laparoscopic camera: IEC 60601 compliance, sterility, cytotoxicity, accelerated aging, and transit testing, with 5 engineers serving as Technical Leads across parallel workstreams.
- Define system requirements, user needs, and verification test strategies in compliance with FDA 21 CFR Part 820 design controls and ISO 14971 risk management, supporting progression toward clinical readiness.
- Coordinate across electrical, systems, and validation disciplines to maintain program schedule and regulatory alignment.

Principal Mechanical Engineer — Front End Innovation

2022 – 2024

iRobot • Bedford, MA

- Led Front End Innovation team of 3 engineers on autonomous docking systems and a team of 5 on Modular Docks, plus a team of 3 on robotic lawn platform development.
- Delivered 5 released docking products — Roomba 405, 505, and 705 Autowash, Roomba Combo 10 Autowash, and Roomba 705X Combo 10 Max Autowash — integrating sensors, power electronics, and automation within sealed enclosures.
- Achieved 20% COGS reduction and 10% labor cost reduction on Modular Docks program through structured design optimization and manufacturing efficiency initiatives.
- Introduced 4 platform-level subsystem features — Modular Evac, Modular Water Handling, Standardized IP Power Supply — adopted across multiple future product lines.

- Assumed project management responsibilities across programs, reducing average project delivery time by 6 weeks through tighter deadline control and cross-functional coordination.
- Developed robotic lawn platform encompassing mobility testing, IP-rated environmental durability validation, and sensor integration; 2 platforms in pipeline.

Principal Mechanical Engineer
2018 – 2022

Capgemini — ASML • Wilton, CT

- Designed precision mechanical assemblies for the Twinscan EXE:5000 lithography system, achieving 8 nm resolution and 110 wafers/hour throughput in ultra-high-vacuum environments.
- Resolved 2 major pre-production design failures — reticle gripper mechanism and electrical control manufacturing — preventing costly field escapes and maintaining production timeline.
- Integrated motion control and alignment mechanisms enabling sub-nanometer positioning accuracy across high-speed reticle handling operations.
- Collaborated across mechanical, controls, and systems engineering to meet performance, reliability, and manufacturing requirements during peak demand periods.

Senior Mechanical Engineer
2017 – 2018

Capgemini — Keurig Dr Pepper • Waltham, MA

- Led puncture needle redesign and full revalidation across 5 brewer platforms — K-Supreme, K-Elite, K-Compact, K-Plus, and K-Classic — developing DFMEA-driven DVP&R strategies for each.
- Designed automated test fixtures enabling 24-hour continuous validation runs, reducing validation cycle time by 67% and eliminating the need for full-time technician attendance.
- Applied nonlinear FEA to optimize structural components, improving fatigue life and reducing field return risk across product lifetime testing.
- Supported manufacturing transfer and validation activities for product launch, including recyclable-material component development.

Senior Mechanical Engineer
2015 – 2017

Teledyne FLIR Systems • Nashua, NH

- Led full product development lifecycle for 8 commercial sensing and imaging products — VP50, CM154 IR clamp meter, VS290 video scope with IR attachments, MR55, MR40, MR59, MR176, and MR77 — from concept through manufacturing release.
- Managed contract manufacturers on quality, cost, and production volume, delivering all 8 products with wireless connectivity and IP-rated environmental protection for field use.
- Coordinated across mechanical, electrical, and manufacturing disciplines to achieve on-time product launches across multiple commercial markets.

Senior Mechanical Engineer
2011 – 2014

Osram Sylvania • Danvers, MA

- Developed mechanical and optical designs for commercial outdoor lighting systems, extending fixture service life from annual replacement to every 5–10 years — a 75%+ reduction in field maintenance incidents.
- Awarded five U.S. patents for novel mechanical and optical product innovations.
- Designed optical and thermal management assemblies meeting ENERGY STAR compliance, collaborating across teams to deliver manufacturable products at scale.

TECHNICAL SKILLS

CAD & Simulation	SolidWorks, NX (Siemens), Creo, FEA, Tolerance Analysis, GD&T
Programming	Python, MATLAB, Arduino
PLM / PDM	Teamcenter, Windchill

Manufacturing	Injection Molding, Ultrasonic Welding, Machining, 3D Prototyping, PCBA Integration
Regulatory & Quality	IEC 60601, FDA 21 CFR Part 820, ISO 14971, Design Controls, DFMEA, Biocompatibility (ISO 10993)

PATENTS & EDUCATION

Patents	Five granted U.S. patents — mechanical and optical product design
Education	B.S. Mechanical Engineering — Georgia Institute of Technology