

Gowtham Subramaniam

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SUMMARY

Mechanical Engineer with 9+ years of experience designing and integrating precision electromechanical systems from concept through production. Strong background in mechanisms, actuation, tolerance stack-ups, and system-level integration across complex hardware products. Experienced in closed-loop control, multidisciplinary design tradeoffs, and cross-functional development in regulated environments.

EXPERIENCE

Mechanical Engineer III

Cepheid, Molecular Diagnostics Systems

July 2022 - Present, Sunnyvale, CA

- Led mechanical architecture definition for an electromechanical subsystem by evaluating three design concepts, selecting the optimal approach, and owning detailed design and integration from concept through production.
- Designed and integrated a closed-loop servo-based actuation system incorporating magnetic and optical position feedback to achieve precise, repeatable motion under tolerance and environmental variation.
- Owned mechanical layout, interfaces, and tolerance stack-ups governing alignment, contact, and repeatability across multi-part assemblies in a regulated production environment.
- Developed a next-generation voice-coil actuation concept as a cost-focused alternative to the servo architecture, leading mechanical design and CAD development to achieve a 60% unit cost reduction while meeting performance targets.
- Developed precision motion and calibration hardware, including an automated XY positioning stage using piezoelectric drives and machine vision, enabling high-accuracy reagent placement.
- Evaluated three glass-to-silicon bonding approaches and selected a fast, lower-cost method for rapid prototyping and a higher-precision, process-driven method for mass production, balancing development time, cost, and manufacturability for micro-well assemblies.
- Engineered magnetic capture mechanisms for sub-micron bead manipulation, optimizing mechanical and fluidic coupling to improve functional performance.
- Collaborated cross-functionally with firmware, systems, and electrical engineering teams to align mechanical design, sensing, and control strategies at the subsystem level.

Mechanical Engineer

Silverside Detectors, Neutron Radiation Security Systems

February 2017 - July 2022, Waltham, MA

- Led mechanical design and system integration for two DARPA-funded radiation detection platforms, including a fixed system and a portable system integrating gamma and neutron sensors, cameras, communications, and platform-specific power subsystems.
- Owned the portable platform end-to-end, from voice of customer (VoC) definition and concept generation through detailed design, prototyping, fielded prototype delivery, and customer training.
- Designed ruggedized mechanical architectures for portable operation, balancing size, weight, thermal management, and serviceability, and developed MIL-STD-810-compliant shock isolation and mounting strategies.
- Defined sealing approaches, mechanical interfaces, and tolerance stack-ups to ensure reliable environmental protection and long-term field durability.
- Performed structural FEA on enclosure and mounting assemblies to validate stiffness, strength, and load paths under handling, transport, and operational loads.
- Collaborated closely with electrical, software, and firmware engineers to align mechanical, power, sensing, and integration requirements across fixed and portable platforms.

EDUCATION

Master of Science in Mechanical Engineering

Northeastern University • Boston, MA • Dec 2016

Bachelor of Engineering in Mechanical Engineering

Anna University • Chennai, India • May 2014

SKILLS

- **Mechanical Design & Integration:** SolidWorks, Onshape, GD&T, tolerance analysis, sheet metal design, injection molding, 3D printing & prototyping, finite element analysis (Abaqus, SimScale)
- **Manufacturing & Process:** Design for Manufacturing (DFM), Design for Assembly (DFA), Failure Mode and Effects Analysis (FMEA), Lean Six Sigma, Value Stream Mapping
- **Programming & Controls:** Python, MATLAB