

Narsi Reddy Sanikommu

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EDUCATION

Master of Science - Mechanical Engineering

Aug 2024 - May 2026

JOHNS HOPKINS UNIVERSITY

Baltimore, MD

Bachelor of Technology - Mechanical Engineering

July 2016- May 2020

National Institute of Technology (NIT Trichy)

Tiruchirappalli, India

SKILLS

Programming Languages	Python C++ C
Software	Microsoft Projects Minitab Arduino IDE MATLAB Processing code ROS2 CorelDRAW KiCAD CAD modeling SolidWorks, CATIA, ANSYS, Abaqus, Creo, AutoCAD, NX CAD Teamcenter PLM NumPy
Technical Skills	GD&T SAP (ECRO, ECM, BOM, PO) 3D Printing and rapid prototyping (FDM and SLA) RCA CAPA Product Innovation Product development Design Controls(User needs, System Requirements, DIDO, V&V, DVDR, and Engineering change) MSA DFSS DFMA Photolithography softlithography Microfluidic device design MEMS Device Fabrication TEM SEM

EXPERIENCE

Becton, Dickinson, And Company

July 2025 - January 2026

Mechanical Engineering Co-op Intern

Sparks, MD, USA

- Designed and validated an analog replacement fixture for the **BD COR GX shuttle** to characterize tube puncture force and clamp-pin material force profiles; developed a spring-based mechanism that replicates puncture-force behavior for **20k cycles**, significantly improving test efficiency versus the prior few hundred cycle tube-replacement-intensive setup.
- Conducted detailed characterization of the **BD COR MX liquid-waste sensor** by developing a 3D contour map of sensor activation as a function of liquid volume, sensor Z-height, and X-offset from the collector; enabled prediction of sensor trigger volume with **95%** accuracy to inform physical design decisions.
- Performed feasibility study and design iteration of the **BD COR PX load cell** using SolidWorks, including leak testing and final design validation; the proposed design enables real-time measurement of sample, diluent, and reagent weights, reducing sample waste, improving error detection, and enhancing troubleshooting capability.
- Executed root-cause analysis (RCA) on the **BD COR MX extractor** magnetic-strength characterization fixture; implemented minimal design changes to eliminate fixture warping by adding a snap-fit support feature that consolidates PCB loading forces into the metal holder.

Soft, autonomous microneedle rolls for oral drug delivery, Dr Gracias Lab

Oct 2024 - November 2025

Research Assistant

Baltimore, MD

- Designed and fabricated soft, autonomous microneedle roll devices using **photolithography & soft lithography** for targeted drug delivery in the GI tract to treat autoimmune disorders like **Crohn's disease and ulcerative colitis**.
- Optimized fabrication of drug embedded gelatin microneedles of 0.3mm dia from usual **2 hours to 2 min** using softlithography, sequential heating and centrifuge cycles. increased efficiency of separation of needles from mold from **40% to 80%**.

Becton, Dickinson, And Company

July 2020 - Aug 2023

Design Engineer 2, Design Engineer 1, GET

Bangalore, India

- Led multiple PE projects involving material change by updating **SolidWorks** drawings per **GD&T** standards, planned and executed DV activities, analyzed data with **Minitab**, DV Protocols & report release, DV Reviews, and ECRO process through **Team-center PLM** and **SAP**. Completed projects 2 weeks ahead of schedule, avoided back-orders and operation delays.
- Coordinated **Test Method updates** by designing a new test fixture and performed **MSA** and **FEA** simulations to replicate fixture engagement with components. Updated and leveraged existing MSA, reducing DV tests by **5x** and saving **2 weeks** of testing time.
- Updated and validated **112 BOMs in SAP**, coordinating with plant stakeholders to avoid duplicate work; detected **5 BOM errors** early, preventing **3 weeks** of potential rework.
- Led **root cause analysis (RCA)** on high-pressure leak test failures, implementing fixture and instruction updates that prevented re-testing, preserved **100%** of DV test data, and saved an estimated **\$20K** in retesting costs and project delays.
- Innovatively leveraged existing BD PIVC platform components to create a new HDS product prototype in **1 week at a cost of \$100**; led internal VoCs and validation activities, proposing a commercialization strategy that projected **6 months reduction in NPD timelines** and substantial regulatory and testing cost savings by utilizing pre-existing FDA-cleared data.
- Submitted **68 Invention Disclosure records**, with **14 IDR** filed as **US patents**, and some are in pipeline.

NOTABLE PROJECTS

Segmented Fluidics Flow for Soft-body actuation, & Self folding shell microfluidics | Baltimore, MD Sep 2025 - Present

- Explored segmented fluidic-flow actuation in soft-bodied systems by developing a single-channel hydrogel "noodle" actuator; implemented segment-wise expansion control using timed fluid delivery and dehydration cycles to achieve flexible robot motion.
- Investigated a multimodal, single-channel microfluidic platform to route drugs and nutrients to multiple target sites; applied the approach to self-folding shell organoids and developed low-cost, reusable SLA-printed prototypes for rapid manufacturing and repeat use.

NOTABLE PUBLICATIONS

Stable flow regulator assembly: US20240175499A1 (Application granted)

Fluid connector system: US12186518B2 (Application granted)

Comprehensive list and details of the patents: ([Google Scholar](#))