

Surya Shanmugam

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EDUCATION

Columbia University

New York, NY

- Master of Science: Biomedical Engineering

Expected Dec 2025

Course Highlights: Biomedical Innovation, Project Management, Design, Innovation and Entrepreneurship

University of North Carolina at Chapel Hill

Chapel Hill, NC

- Bachelor of Science: Biomedical Engineering Major & Mathematics Minor

May 2021

Course Highlights: Materials Science, Mechanics & Statics, Systems & Signals, Instrumentation, Microcontroller Application, Systems Neuroscience, Tissue Engineering, Design & Product Development

PROFESSIONAL EXPERIENCE

Product Design Engineer (Freelance) | zeromouse

Cary, NC

- Spearheaded Indie Startup design team and produced 4 mouse prototypes. Feb 2023 – Feb 2024
- Employed 3D CAD software to design, manufacture, and test prototypes for quality and identify improvement.
- Gathered, verified, and implemented tester & user feedback in 4 prototypes.
- Directed 3 rounds of prototyping, tracked & managed action items.

Software QA Engineer | FUJIFILM

Cary, NC

- Built over 200 test cases, including 20 automated, using Selenium. Oct 2021 – Jun 2022
- Acted in Scrum to identify priorities for bug fixes and feature releases in PACS System.
- Verified 100 test cases to reproduce bugs and fixed after reviewing source code.
- Designed Proof of Concept environments to demonstrate new features and bug fixes for 2 major releases.
- Identified areas of improvement and implemented new QA methodology, increasing efficiency by 25%.

University of North Carolina at Chapel Hill

Chapel Hill, NC

CAD Designer | The Helping Hand Project

Aug 2019 – May 2021

- Employed 3D CAD software (SOLIDWORKS) to design & ship 15 functional prosthetic devices.
- Directed concurrent projects between branches to ensure timely completion and quality.

Co-Instructor | Tissue Engineering, Anatomy

Aug 2019 – May 2021

- Co-Instructed a class on Tissue Engineering to 40+ students, Physiology and Anatomy to 80+ students.
- Constructed a new curriculum and conducted weekly labs.

Research Assistant | Sode Lab

Aug 2019 – May 2021

- Designed PES-engineered GOx enzyme biosensors for better glycemic control in diabetic patients.
- Presented findings and progress biweekly, tracked project schedules, and identified action items.

PROJECTS

Senior Design Project | Rigid Symmetry Device

Chapel Hill, NC

- Applied Design for X and LEAN Six Sigma Black Belt principles. Aug 2020 – May 2021
- Developed a class 1 medical device for use by ACL-R patients adhering to FDA regulations and ISO standards.
- Built demo using biofeedback data and VR to visualize load distribution during squatting (Python).
- Integrated 10 microcontroller/sensor systems to analyze gyroscopic and biometric feedback (MATLAB, Java, C++).
- Organized project using Greenlight Guru QMS and extensive design process documentation.
- Utilized 4 manufacturing processes (injection molding, 3D printing, metal fabrication, machining) to prototype.

TECHNICAL SKILLS

- **Programming:** Python, MATLAB, C, C++, Java, R, SQL, LabView
- **Design:** SOLIDWORKS, Autodesk (Inventor, Maya, etc.), AutoCAD, Creo, Google SketchUp, Cura, Fusion360
- **Product Design:** Lean Six Sigma, Design for X, Medical Device FDA Regulations & ISO Standards (510(k), PMA FDA Pathways, ISO 13485, ISO 9001, ISO 10993, IEC 60601), Greenlight Guru (QMS)
- **Certifications:** Lean Six Sigma White Belt, Green Belt, and Black Belt