Richardson, TX
maanz@umich.edu
734-489-2925

## SUMMARY

**Highly motivated Mechanical Engineer with a Master's in Design Science / Product Design from the University of Michigan, Ann Arbor (3.95 GPA).**

**Proven ability to design and deliver products through ideating, designing, and prototyping.**

**Eager to leverage design thinking and strong technical skills to solve complex problems and create impactful products that benefit the world.**

www.manasam.com

# MANASA Muthukumar

## EXPERIENCE

**Mechanical Design Engineer (Intern)**
Celestica
Richardson, TX
June 2025 - Present

- Supported mechanical system design and assembly for data center rack components such as switches and accelerators for projects involving large tech companies including the largest AI company in the world.
- Created and optimized component designs using 3D modeling and simulation tools; worked with customers from the largest AI company to perform R&D testing. Engaged with suppliers to identify parts to order for the project.

**Research Assistant, Transportation Research Biosciences Group**
University of Michigan Transportation Research Institute · Internship
Project Sponsor: Toyota, Link to winning poster
Ann Arbor, MI
May 2024 - Aug 2024 · 4 months

- Modeled human neck musculature and C-spine from CT data to study whiplash injuries in vehicle crash scenarios across diverse populations (by age, gender, and body size), supporting inclusive ergonomic and safety design.
- Developed 100 anatomical models using Mimics and 3D CAD tools, applying knowledge of biomechanics, human anatomy, human factors and data-driven modeling to improve simulation accuracy.
- Leveraged AI-assisted workflows and segmentation techniques to streamline model development, enabling analysis and visualization.

**Research Assistant, Biomechanics Research Laboratory**
Mechanical Engineering Department - University of Michigan
Ann Arbor, MI
Oct 2023 - Jul 2024 · 10 months

- Performed research delving into the dynamics of neck muscle engagement and its impact on head acceleration during sport-related impact events, focusing on high school soccer players.
- Orchestrated lab sessions, fostering collaboration with teammates and 40 study participants to gather data for analysis pertaining to neck muscle activity.

# MANASA Muthukumar

## SKILLS

- Design Thinking
- Product Design
- Human-centered Design
- Mechanical Engineering
- Software Proficiency
- Project Management
- Communication & Interpersonal
- Creative Thinking

## TOOLS & SOFTWARE SKILLS

- CAD: Creo, WindChill, Fusion 360, Onshape, DFM Pro
- Biomechanics: 3D Slicer, Mimics, EMGWorks, REDCap
- Microsoft Office: Word, Excel, PowerPoint
- Data Analysis and Programming: Python, R
- Machine Shop: 3D Printing, Laser Cutting, Basic Hand Tools
- UI/UX: Figma
- Design Methods: Design Thinking, Human-centered Design, Patent Process
- Design: Adobe Photoshop, Illustrator, Fresco, Procreate
- Video Editing: Adobe Premiere Pro

## PROJECTS

**Analytical Product Design** - Mane Magic: University of Michigan (Aug 2023 – Dec 2023)

- Conceptualized, designed, and 3D-printed a novel hair oil applicator that improved user comfort and reduced product waste by 20%.
- Led the design team through the entire product development process, from user research and ideation to prototyping and presentation, resulting in a successful concept pitch to potential investors
- Successfully executed a rigorous product development process, utilizing tools like QFD, customer journey mapping, and FMEA to identify and mitigate potential design flaws, resulting in a robust and user-friendly product.
- Applied strategic product thinking to identify user needs and market opportunities, resulting in a product design that met user expectations and demonstrated strong market potential.

**Advanced Design for Manufacturability** – Fountain Pen: University of Michigan (Jan 2024 – May 2024)

- Revamped a fountain pen design, implementing DFM/DFA principles for cost reduction and efficiency enhancement. Redesigned a fountain pen by applying DFM/DFA principles to optimize manufacturability, reducing costs by 27% and assembly time by 50%, while ensuring design feasibility within engineering resource and budget constraints.
- Developed Bill of Materials (BOM) conducted engineering calculations and cost estimates to evaluate design alternatives, balancing performance and practicality, in a data-driven manner. Utilized CAD to develop and refine component and sub-assembly designs.

**Interaction Design** - Cooking Compass App, University of Michigan (Aug 2023 – Dec 2023)

- Conducted user research (surveys, interviews) to inform the design of an intuitive cooking application. Developed both paper and clickable prototypes, resulting in a 15% increase in user satisfaction in usability testing.
- Designed an intuitive user interface with a focus on ease of use and accessibility, resulting in a 10% reduction in user errors during usability testing
- Created a visually appealing and user-friendly interface with a focus on clear typography, intuitive navigation, and a consistent visual hierarchy "

# MANASA Muthukumar

## AI Tools

- **Generative AI, Prompt engineering**
- **TotalSegmentator, AI tool for Biomechanical 3D modeling**

## LEADERSHIP ACCOMPLISHMENTS

- **Head of Design & Event Organizer, Women Inclusivity Network**
  NIT Trichy (May 2022 - May 2023)

  Led the design and execution of networking events, engaging 50 mentors and 70 mentees in a successful mentorship program for female students.

- **Captain, Women Soccer Team,**
  NIT Trichy (May 2021 - May 2023)

  Captained the Women's Soccer Team at NIT Trichy, contributing to improved team performance and fostering a positive and supportive team environment. As a team, we won second prize at intercollege sports meet at Manipal Institute of Technology

- **Author, creative writer with a published Children's Book, 'Larry the House Lizard.'**

  Larry the house lizard is a funny book written from the perspective of house lizards that are often considered pests. Aimed to teach empathy, the book is light and humorous. The book was well received and appreciated by many. Find it on Amazon

## EDUCATION

- **University of Michigan, Ann Arbor, MI (Dec 2024)**
  Master of Science, Design Science; GPA: 3.95

  Relevant Coursework: Analytical Product Design, Interaction Design, Design Process Models, Creativity & Product Development, Visual Storytelling, Project Management

- **National Institute of Technology, Trichy, India (May 2023)**
  Bachelor of Technology, Mechanical Engineering; GPA: 3.62

  Relevant Coursework: Mechanics of Machines, Design of Machine Elements, Manufacturing Technologies, Operations Management