VAISHNAV CHUNDURU

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EDUCATION

Texas A&M University, College Station, TX **Aug 2022 – May 2024**
Master of Science in Mechanical Engineering (STEM) **GPA: 4.0/4.0**

Amrita Vishwa Vidyapeetham, Bengaluru, India **Aug 2017 – Aug 2021**
Bachelor of Technology in Mechanical Engineering **GPA: 9.2/10 (Top 5%)**

SKILLS

- **Software:** Solidworks, LabVIEW, MATLAB, Ansys, AutoCAD, Inventor, Fusion 360, Catia, Creo, Cadence, Visual Studio, Microsoft Office
- **Programming:** Python, LaTeX, HTML, C#, CSS, JavaScript, AWS Cloud Foundation
- **Methodologies:** Design of Experiments, Root Cause Analysis, FMEA, GD&T, FEA, DFM, 2D&3D drafting, Rapid prototyping, Agile workflow, PLM, Object-oriented programming
- **Equipment:** Atomic force microscope, White light interferometer, Thin film applicator, Laser cutter, Sputter coater, Optical microscope, Laser doppler vibrometer, 3D Printers, UV Etcher, DAQs, Oscilloscopes, Sensors, Soldering

EXPERIENCE

Texas A&M University, College Station, TX **Aug 2022 – Present**
Graduate Research Assistant:

- Developing novel Robotic Grippers and Haptic Actuators made from liquid crystal elastomers with a unique ability to grasp objects, analyze surface topography, and differentiate 15 different materials
- Managed the procurement, assembly, and evaluation of new capital equipment, including a Hybrid 3D printer, UV Curing System, and Centrifugal Mixer, collectively worth $70,000
- Performed root cause analysis to detect and resolve errors in experimental data by modifying testing methodology and redesigning test equipment
- Conceptualized and designed experiments using advanced techniques including Atomic Force Microscopy, White Light Interferometry, Laser Doppler Vibrometer to analyze changes in mechanical properties of elastomers

Graduate Teaching Assistant:

- Served as a Laboratory Instructor for "Mechanical Measurements" course, offering guidance and supervision on conducting experiments to a diverse cohort of 350 sophomores
- Delivered lectures and trained students in data acquisition, statistical techniques, and experimental design using LabVIEW software, along with various input sensors

Tata Consultancy Services, Hyderabad, India **May 2021 – Jul 2022**
Simulation & Automation Engineer:

- Executed comprehensive multi-physics analysis using finite element method, leveraging High-Performance Compute clusters, resulting in a reduction in simulation time from 8 hours to 20 minutes
- Collaborated with global R&D team to lead the development of Automated Design Processes (ADPs) covering semiconductors, thermal, mechanical, and electrical analysis
- Mentored 5 engineers from diverse disciplines (electrical, mechanical, computer science) to draft detailed guides for automating simulation on Ansys applications (Space Claim, Workbench, Fluent, SIwave, HFSS, Icepack, AEDB)

Full Stack Developer:

- Programmed automated web scrapping system using Python and Scrapy that has capability of parallelly analyzing, abstracting, and organizing key information from 600 URLs in 5 minutes
- Designed, developed, and deployed several interactive APIs in Python using modules such as Docker, Kubernetes, Flask, and Swagger while collaborating with a team of 5 other software developers

Indian Institute of Technology Delhi, India **Nov 2020 – May 2021**
Product Design Intern:

- Launched an engaging tracing game using Visual C# through interactive hand gesture recognition to facilitate children's learning of basic geometric shapes and alphabets
- Created an application using an Ultraleap Controller that converts any display into an interactive touchscreen surface

Indian Institute of Technology Madras, India **May 2019 – Jun 2019**
Research & Development Intern:

- Developed and assessed a graphical user interface (GUI) application on the .NET framework by integrating multiple self-authored dynamic-link libraries, resulting reduction in computational time by 30%
- Constructed a user-friendly software tool that enables engineers to perform forward kinematic analysis of any single degree of freedom planar mechanisms by simply drawing the join map on a blank canvas

ACADEMIC PROJECTS

Proprietary Tribometer Design & Development

- Modelled, procured, and assembled a proprietary linear tribometer with data acquisition capability at 10,000Hz, at an accuracy of 0.002N for every 0.025 mm increment, currently evaluated at $30,000
- Implemented PID tuning to optimize the performance of tribometer, achieving a 75% reduction in steady-state attainment time and a notable 30% increase in accuracy compared to any other tribometer

Automated Workflow of Additive and Subtractive Manufactured Parts

- Generated G code and simulated an automated workflow for CNC subtractive manufacturing of custom-designed components made from a diverse range of materials, including plastic, ceramic, and metals
- Documented a comprehensive pipeline for selecting optimal additive manufacturing techniques, encompassing material properties, designed geometry, production size, and desired accuracy levels

Autonomous Robotic Harvesting System

- Presented a comprehensive proposal for the development, prototyping, and simulation of a novel inflatable end-effector designed to efficiently harvest any round or pseudo-round shaped produce
- Validated integration with widely available robotic platforms by performing kinematic and dynamic analysis

Intuitive Control of Virtual Globe Using Vision-Based Hand Tracking System

- Reinvented computer interaction by leveraging advanced machine vision and machine learning algorithms to comprehend human hands and gestures, eliminating the necessity for traditional mouse and keyboard
- Programmed an innovative application that transformed learning experience of maps into a fun interactive game

Flipkart GRiD 2.0 - Robotics Hackathon

- Collaborated in a five-member team to develop a comprehensive proof of concept and project build proposal for a 5 lb. payload autonomous smart indoor drone designed for automated warehouse management purposes

Miniature Paper Printing Machine

- Fabricated an operational miniature paper printing machine by implementing the principles of Kinematics & Dynamics of Machines coursework, utilizing Meccano sheet metal components

Smart Areal Robot

- Engineered a sophisticated robot from the ground up, incorporating cutting-edge features including line following, edge detection, Bluetooth control, and obstacle avoidance systems with a $100 budget

RELEVANT COURSES

- Additive and Subtractive Processes in Custom Manufacturing
- Advance Product Design
- Control Systems Design
- Computer Aided Design & Engineering
- Design of Machine Elements
- Industrial Robotics
- Innovative Mindset for Design & Research
- Intuitive and Counter-Intuitive Mechanisms
- Kinematics and Dynamics of Machines
- Mechanics of Robotic Manipulator
- Modelling and Analysis of Mechanical Systems
- Nanoindentation and Small-Scale Contact Mechanics

AWARDS AND ACHIEVEMENTS

- Received Academic Excellence Award for the year 2020-2021
- Achieved 4th place in School of Engineering, Amrita Vishwa Vidyapeetham
- Finalist of Toycathon 2021 (Hackathon: Economy of Toys and Games)
- Financing education through Scholarships, Grants, Teaching Assistantships, and Research positions

RESEARCH PAPERS

- V. Chunduru, M. Roy, R. N. S. Dasari, R. G. Chittawadigi, “Hand Tracking in 3D Space using MediaPipe and PnP Method for Intuitive Control of Virtual Globe,” in IEEE 9th R10 Humanitarian Technology Conference, 2021
- M. Roy, R. N. S. Dasari, V. Chunduru, R. G. Chittawadigi, and S. K. Saha, “Interactive Image Projective Desktop and Screen Using Hand Tracking by Leap Motion,” in IEEE 9th R10 Humanitarian Technology Conference, 2021