Divik Bhargava

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EDUCATION

University of California, Los Angeles (UCLA) December, 2024
MS in Mechanical Engineering — Concentration in Design, Manufacturing and Robotics **GPA: 3.89/4**
Coursework: Kinematics of Robotic Systems | Dynamics of Robotic Systems | Control of Robotic Systems | Mechanics of Flexible Structures and Soft Robots | Orthopaedic Biomechanical Engineering | Complaint Mechanism Design | Bionic Systems Engineering | Analytical Fracture Mechanics | Linear Dynamic Systems | Computational Methods in Structural Mechanics

Vellore Institute of Technology (VIT), Vellore 2016 - 2020
B.Tech in Mechanical Engineering **GPA: 3.91/4**
Publication: "Drag and heat-flux reduction using counterflow jet and spike - Analysis of their equivalence for a blunt cone geometry at Mach 8." Journal of Applied Fluid Mechanics, Volume 14, No. 2, pp. 375-388

SKILLS

Technical Skills: Mechanical Design | New Product Development | Design of Experiments(DOE) | DFSS | CAD | CFD | FEA | Structural Analysis | 3D Printing | GD&T | Injection Molding | Die Casting | Sheet Metal Design | 21 CFR Part 820 | ISO 13485 | FMEA | Design Control | Test Method Development | Design Verification | Statistical Analysis | Root Cause Analysis
Software Skills: SolidWorks | CATIA | ANSYS | MATLAB | Minitab | Visual Studio | Java | Python | PowerBI
Soft Skills: Project Management | Problem Solving | Critical Thinking | Leadership | Communication | Creativity | Teamwork

EXPERIENCE

Becton Dickinson and Company Bangalore, IN
R&D Design Engineer II 07/2020 - 08/2023
- Secured 9 US patents and drove 22 invention disclosures through pioneering design innovations in medical devices
- Spearheaded the design, prototyping, and rigorous Design of Experiments(DOE) optimization of an electro-mechanical device, achieving a remarkable 150% increase in viberational energy transfer through catheter length
- Executed end-to-end design and development activities of neuraxial syringes, needles and next-gen disinfecting cap. Established system requirements and developed CAD models incorporating GD&T and tolerance stackup analysis
- Conducted FEA, including contact pressure analysis, dynamic snap-fit simulation, and engagement evaluation, to validate syringe-needle leakage, plunger pull-out, and needle shield removal forces, reducing verification efforts by 30%.
- Strategized functional verification activities, yielding an 40% reduction in test sample size. Developed test method fixtures, planned MSA, and analyzed statistical data using Minitab to summarize design verification results
- Performed product end-user risk assessment as per ISO 14971, created an FMEA matrix, and mitigated design risks
- Led digital transformation initiative by developing C# software automating PLM-SAP activities, cutting down on manual efforts by 90%. Crafted PowerBI dashboard, managing project allocation data for over 1000 employees

ISGEC Heavy Engineering Ltd. Yamunanagar, IN
Engineer Intern 05/2019 - 06/2019
- Drove a 15% efficiency improvement in a mechanical press through strategic redesign of key components: connecting rod, gears box, and counterbalance cylinders. Minimized machine downtime, through optimized component design

ASME Projects Team, VIT Vellore VIT, Vellore
Head of Design Department 01/2017 - 01/2019
- Contributed to the design and fabrication of innovative robots and radio-controlled airplanes for diverse applications

Aeronautical Development Establishment(ADE) Bangalore, IN
Research Intern 05/2018 - 07/2018
- Performed CFD simulations of a two-element wing in ANSYS Fluent at various flow Reynolds numbers, calculated aerodynamic characteristics, and proposed a cove-tab design improving lift-to-drag ratio by 9%.

ACADEMIC PROJECTS

- **Limb exoskeleton**: Developed an exoskeleton to restore pathology-affected gait, leveraging biomechanical simulations to refine actuation torque. Designed mechanical components, motor dynamics, and transmission for peak efficiency
- **4-DOF Chopping Robot**: Implemented an efficient Python-based trajectory tracking control system, performing kinematic and dynamic analysis, and design components realizing precise cutting and organization of a hard-boiled egg
- **5-DOF robotic manipulator arm**: Performed kinematic analysis, prepared CAD models, 3D printed components, and implemented efficient trajectory generation for gripping and organizing various objects
- **3D Y-Catapult Simulation**: Leveraged MATLAB to model a discrete elastic beam network, incorporating Newton-Raphson method for dynamic simulation of catapult mechanics and precise projectile trajectory mapping
- CFD analysis of counterflow jet and forward facing spike in a hypersonic flow to reduce pressure drag and heatflux

AWARDS

BD Young Engineer Award Becton Dickinson 2021
G.D Naidu Young Scientist Award VIT, Vellore 2019