DEVESH SHARMA

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- Mechanical Engineer experienced in system and component level design of electro-mechanical products from concept to production.
- Hands-on experience in building and testing functional prototypes, and creating test plans and setups to perform design verification.
- Self-driven with ability to lead projects through fast-paced product development cycles and collaborate with cross-functional teams.

EDUCATION

M.S. AEROSPACE ENGINEERING, 3.87/4.0; University of Colorado Boulder, Boulder, CO　　　　**Aug 2017 - May 2019**
B.S. MECHANICAL ENGINEERING; Delhi Technological University, New Delhi, India　　　　**Aug 2011 - May 2015**

SKILLS

TECHNICAL: 3D CAD, Finite Element Analysis (FEA), Design for Manufacturing (DFM) (CNC Milling, Injection Molding, Sheet Metal, and 3D Printing), Geometric Dimensioning and Tolerancing (GD&T), Tolerance Analysis, Failure Mode and Effects Analysis (FMEA), PCB Design
SOFTWARE: SolidWorks (5000+ hrs), Abaqus FEA, ANSYS FEA, ANSYS Fluent, Autodesk EAGLE, MATLAB, C++, Python

EXPERIENCE

MECHANICAL ENGINEER, *Integrated Remote and In-Situ Sensing, Boulder, Colorado*　　　　Dec 2019 - Present
- Developed and built electro-mechanical and software solutions for autonomous aerial and ground based systems for international and domestic projects worth millions of dollars.
- Designed, prototyped, and deployed a network of automated tower and vehicle-based tracking stations to track and acquire data from stratospheric balloon-based sensor systems deployed at 100,000 ft, improving data acquisition reliability by 40%.
- Managed production, integration, and validation testing of 500 meteorological sensor payloads worth $600,000: sourced mechanical and electrical parts, supervised 4 assembly technicians, and designed assembly and fabrication jigs and fixtures.
- Designed a 32-bit DC motor controller PCB in *EAGLE* and wrote control software in *C++* to control a commercial 2-axis antenna rotator.
- Reduced operational downtime of pneumatic aircraft catapult launchers by 20% by identifying root cause of failures and optimizing component design and materials using FEA in *SolidWorks Simulation*.

PRODUCT DESIGN ENGINEER, *Asteria Aerospace, Bangalore, India*　　　　June 2015 - Aug 2017
- Spearheaded mechanical product design of fixed-wing and multi-rotor unmanned aerial system (UAS) products and subsystems: gyro-stabilized electro-optical (EO) and infrared (IR) sensor payloads, worth hundreds of thousands of dollars.
- Led product development of the A400 UAS product worth $100,000 through its entire product cycle from conception to mid-volume production including poduct launch support within a tight timeline of 1-year.
- Designed injection molded plastic (ABS), foam (EPP), composite (CFRP), and CNC machined metal (Aluminum) parts in *SolidWorks*.
- Collaborated directly with local and overseas (China) manufacturers and vendors to track tooling and manufacturing process maturity.
- Reviewed and approved engineering drawings in compliance with *ASME Y14.5* standards for manufacturing and assembly.
- Managed 3D and 2D CAD databases and bill of materials (BOM) of 100+ part assemblies in *SolidWorks PDM*.
- Conducted system-level design review meetings with personnel from 4 cross-functional teams - hardware and software engineers, manufacturing, operations, and assembly technicians and presented actionable summary reports to upper management.
- Devised test plans and fixtures to test reliability of actuators and quick-release mechanisms over 1000 hours of flight operation.

PROJECTS

ASTEROID MINING SPACECRAFT, *NASA Innovative Advanced Concepts Funded Project*　　　　Aug 2018 - May 2019
- Designed in *SolidWorks* and validated through CAE (stress and thermal analysis) in *Ansys*, a novel soft robotic spacecraft to extract and launch regolith (inorganic soil) on extreme surface and micro-gravity environment (space vacuum, -190°F to 260°F) of asteroids.
- Evaluated feasible mining mechanism concepts through design trade studies using Pugh chart, weighted matrix, and FMEA.

AUTOMATED WAREHOUSE MOBILE ROBOT　　　　Jan - April 2019
- Designed and built an autonomous ground robot and mechanisms to extract, transport, and deliver packages inside a warehouse.
- Implemented image-processing based PID steering control using OpenCV and D^* path planning algorithm in *Python* on Raspberry Pi.

UNMANNED AIRCRAFT DESIGN, *$350,000 Lockheed Martin Funded Project*　　　　Jan 2012 - May 2014
- Drove aircraft design, selected electro-mechanical actuators, and led flight testing of a 75 lb, 12 ft wingspan unmanned aerial vehicle.
- Designed composite mold tooling and fabricated laminated carbon fiber parts using vacuum assisted resin transfer molding.
- Decreased aircraft weight by 40% by optimizing airframe parts using analytical tools developed in *MATLAB* and FEA models in *Abaqus*.

UNMANNED AERIAL SYSTEM DESIGN FOR AUVSI SUAS COMPETITION　　　　March 2012 - June 2014
- Led the design and development of autonomous aircraft systems, integrated avionics, and operated the systems during testing.
- Achieved a 3rd, 6th, and 3rd finish in the 2012, 2013, and 2014 competition among 29, 45, and 48 competing teams respectively.