Pujith Sai Eswar Allam

Portfolio |**Linkedin**| pujithallam@gmail.com| (480) 942-4991 | Tempe, AZ

SUMMARY

Mechanical engineering graduate with expertise in manufacturing processes, CAD modeling, and industrial safety. Skilled in optimizing production workflows, improving machine utilization, and implementing process improvements using ANSYS, SolidWorks, and MATLAB. Passionate about product design, rapid prototyping, and mechanical innovation, with a proven ability to drive process improvement and enhance efficiency in manufacturing environments.

TECHNICAL SKILLS

- **Design and Modeling Tools**: SolidWorks (CSWA), AutoCAD, Fusion360, CATIA, Revit, Creo, NX Cad.
- **Programming:** Python, MATLAB, Arduino, PLC , Deep Learning.
- **Analysis:** ANSYS Fluent, Ls Dyna, COMSOL (Multiphysics), Abaqus, MS Nastran.
- **Data Handling and Documentation:** Microsoft suite, SAP (Manufacturing Operations, BOM Management), Minitab.
- **Technical Skills:** Lean Manufacturing, Finite element analysis, Fitting Models, Supervised Learning, Bill of materials, Computational Fluid Dynamics, GD&T, Root cause analysis, Semiconductor manufacturing Processes, statistical process control, Quality Control & Inspection, Mechanical Design, Project Management, and Mechanical Testing and Validation, Arduino Programming, Closed-Loop Control Systems, Mechanical Assembly and Structural Alignment, Design of experiments, Tensile and Fatigue Testing.
- **Soft skills:** Project Management, Interpersonal skills, Strong Communication, Problem Solving, Teamwork, Technical Leadership.

WORK EXPERIENCE

Research Aide

Arizona State University, Tempe, (USA) **June 2025 – Present**

- Designed and simulated digital twins of manufacturing systems using SolidWorks, ANSYS Fluent, and MATLAB, increasing process visualization accuracy by 25%.
- Applied CFD and thermal modeling techniques in COMSOL and ANSYS to optimize energy flow and heat dissipation across components, improving reliability by 18%.
- Automated quality assessment workflows using Python and Minitab, reducing manual inspection time by 30% while maintaining high precision.
- Developed 3D autoencoder models for defect detection, integrating machine learning and supervised learning principles to identify manufacturing faults in real time.
- Prepared technical documentation, SOPs, and reports on equipment integration, mechanical alignment, and process improvement using the Microsoft Suite and SAP BOM Management tools.

Engineering Intern

Synergies Casting Limited, Visakhapatnam, (India) **March 2021 – Feb 2022**

- Conducted dimensional inspections and tolerance analysis using GD&T, ensuring compliance with engineering drawings and reducing out-of-spec components by 15%.
- Performed root cause analysis on wheel distortion during casting using Lean Manufacturing techniques improved production yield by 12%.
- Operated and monitored die casting, heat treatment, using statistical process control (SPC) to maintain consistency and improve part reliability.
- Supported equipment installation and commissioning, verifying mechanical alignment and process stability for foundry systems.
- Implemented quality control measures and preventive maintenance schedules with cross-functional teams, reducing downtime by 20%.
- Documented process flow improvements and inspection results using Excel dashboards and SAP, creating traceable manufacturing records.

PROJECTS

Advanced Computational Fluid Dynamics (CFD) Simulation and Analysis of Complex Geometries **November 2024**

- Modeled aerodynamic geometries using SolidWorks and analyzed flow behavior in ANSYS Fluent under Earth and Mars gravity.
- Applied multiphase flow simulation to optimize material behavior and thermal boundary conditions.
- Achieved a 41.3% improvement in lift force oscillation stability by redesigning cylinder shapes through iterative CFD optimization.

Design and Development of Tensile Testing Machine **May 2025**

- Designed and fabricated a tensile testing setup using Arduino, load cell, and HX711 amplifier with closed-loop motor control.
- Developed automated fatigue testing protocols in MATLAB, achieving a ±2% error tolerance compared to industrial-grade equipment.
- Managed a 5-member team overseeing calibration, structural testing, and system validation.

Thermal and Structural Analysis of Additive Manufacturing Processes using ANSYS **April 2024**

- Conducted thermal and structural simulations of FDM and LPBF processes using LS-DYNA, Abaqus, and COMSOL, refining nozzle temperature and scan speed for improved print quality.
- Improved material strength by 17% through thermal optimization and heat transfer modeling.
- Applied finite element analysis (FEA) to predict deformation and reduce part distortion during solidification.

EDUCATION

Arizona State University, Tempe, Arizona GPA:3.50/4.0 **August 2023 - May 2025**

Master of Science in Mechanical Engineering

Sathyabama Institute of Science and Technology, India GPA:8.25/10 **July 2019 - May 2023**

Bachelor of Engineering (B.E), Concentration: Mechanical Engineering

CERTIFICATIONS

Certifications: Certified Lean Six Sigma Green Belt |Additive Manufacturing Specialization | Certified SOLIDWORKS 3D Creator Associate |MATLAB Onramp |Semiconductor Fabrication |Supply chain management |Introduction to Geometric Dimensioning and Tolerance | SOLIDWORKS Additive Manufacturing Associate | Engineering Project Management | Inter- personal Skills| SolidWorks CAD Design Associate.