Ali Shaygani

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Profile

Forward-thinking and performance-oriented Mechanical Engineer with a Master's degree in Mechanical Engineering, specializing in advanced precision design and automation systems. Proficient in developing intricate CAD models and crafting high-accuracy components utilizing SolidWorks and ANSYS. Demonstrated expertise in GD&T, tolerance studies, and optimizing manufacturing processes to achieve robust and cost-effective designs. Skilled in integrating optical and mechanical systems, refining production workflows, and collaborating across teams to elevate product efficiency and dependability. Committed to creating innovative tools that redefine industry benchmarks.

Professional Experience

Technical Engineer   2020 – 2022
Aramis Jahan Did Co.

- Designed and optimized high-precision mechanical assemblies using SolidWorks, implementing advanced DFM/DFA principles to achieve tight tolerances and compliance with industry standards.
- Conducted detailed tolerance stack-up analyses and advanced FEA simulations, ensuring structural integrity and performance reliability under operational conditions.
- Collaborated with suppliers and manufacturing teams to address design and assembly challenges, streamlining production workflows and improving efficiency.
- Created comprehensive 3D models, technical drawings, and BOMs while adhering to GD&T standards to enhance manufacturability and precision.
- Managed over 15 contracts, utilizing technical expertise and project management strategies to boost project win rates by 45% through innovative solutions and effective leadership.

CAD Drafter   2018 – 2020
Mazandaran Steel Industries

- Create 3D models, 2D drawings, and BOMs using CAD software, applying DFM/DFA principles for efficient production.
- Collaborate with teams to meet design, prototyping, and testing requirements.
- Apply GD&T, conduct basic FEA simulations, and optimize designs for performance and cost.
- Manage design documentation and ensure compliance with industry standards (e.g., ASME, ISO) in PDM systems.

Education

MEng. Mechanical Engineering   2022 – 2024
Concordia University

B.Sc. Mechanical Engineering   2015 – 2020
University of Science and Culture

🧠 Technical Skills

CAD software
SolidWorks (Advanced, including sheet metal and surface modeling), CATIA, AutoCAD

Manufacturing Principles
DFM/DFA, Additive Manufacturing, Non-Destructive Testing (NDT)

Standards & Compliance
Geometric Dimensioning & Tolerancing (GD&T)

CAE software
ANSYS(FEA), MATLAB (optimization and simulation)

Optimization Techniques
proficient in using optimization algorithms and Operation Research(OR) tools

Productivity Software
Microsoft Office Suite (Word, Excel, PowerPoint, Outlook)

🧩 Key Projects

Reverse Engineering and Die Design for Manufacturing Coil Springs in SUV Suspension Systems for IKCO

- Analyzed spring characteristics and performance requirements; documented material properties to create a 3D model of the coil spring and die in SOLIDWORKS.
- Manufactured and tested a prototype spring to ensure it meets quality and performance standards.

Design and Optimization of a 3D-Printed Manual Water Pump for Enhanced Efficiency and Portability

- Designed a 3D-printable lever-piston mechanism using Autodesk Fusion 360 and SolidWorks, resulting in a 20% increase in pump efficiency and a 10% reduction in manufacturing costs.
- Conducted structural analysis using ANSYS Workbench to ensure durability under operational conditions.

Optimization of Cylindrical Pressure Vessel Design Using Finite Element Method for Weight Reduction and Cost Efficiency

- Performed Finite Element Analysis (FEA) using ANSYS, optimizing the pressure vessel design to reduce wall thickness by 7% and overall weight by 9%, leading to significant cost savings.

Optimum design of rolling element bearings using genetic algorithms and simulated annealing

- Applied Genetic Algorithms and Simulated Annealing using MATLAB to optimize bearing design variables, enhancing dynamic capacity and fatigue life by 12%.