KRUSHNAM MISTRY

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PROFESSIONAL SUMMARY

- Dedicated and passionate Aerospace Engineer with a strong foundation in design and quality analysis. Committed to leveraging my expertise to drive the success and advancement of organizations within the Manufacturing Industry.

CORE COMPETENCIES

- **Design and analysis:-** Catia V5 | solidworks | Autocad | ANSYS-Fluent | LS-DYNA | Solidworks flow simulation | ANSYS Mechanical | ANSYS Fluent | ANSYS Workbench | SolidWorks Flow Simulation | LS-DYNA | MATLAB | Finite Element Analysis (FEA) | Computational Fluid Dynamics (CFD) | Nonlinear Analysis | Explicit Dynamics | Thermo-Structural Analysis | Mesh Generation | Post-Processing
- **Process Improvement tools**: Statistical process control | 7QC tools | lean six sigma (DMAIC) | GD&T | Root cause analysis | SPSS | regression analysis| DOE
- **Soft skills**: Critical thinker |adaptive |creative | effective communicator

EDUCATION

- **Master Of Engineering, Aerospace Engineering (Sep 2022 – May 2024)**
  Carleton University , Ottawa, Canada
- Bachelor of Engineering, Aeronautical Engineering (**Aug 2018 - May 2022)**
  Gujarat Technological University, India

WORK EXPERIENCE

- **Freelance CAE Engineer I May 2024 - Current**

- Performed **CAD geometry cleanup, defeaturing, and model simplification** for simulation readiness
- Developed **high-quality structured and unstructured meshes**, ensuring element quality metrics (skewness, aspect ratio, orthogonality) met convergence standards
- Defined **material models, nonlinear contact interactions, boundary conditions, and load cases** aligned with real operational environments
- Conducted **linear and nonlinear static structural analysis**, dynamic analysis, and thermo-mechanical simulations
- Executed **CFD simulations for external aerodynamic flows**, including lift, drag, pressure distribution, and flow separation analysis
- Applied **explicit dynamic analysis (impact and crash scenarios)** for landing gear safety and failure prevention studies
- Performed detailed **post-processing of stress tensors, strain energy, deformation patterns, safety factors, and thermal gradients**
- Conducted **mesh convergence studies and result validation** to ensure numerical accuracy and model reliability
- Supported **design optimization and structural performance improvement** through simulation iterations
- Prepared **technical reports, engineering documentation, and result visualizations** for academic and industrial stakeholders

- **Simulation lab Pvt Ltd, Pune, India**
  CAE Engineer | Scientific research and development | (december -21 to April-22)

- **Product, Process, and Project Development** : Enhanced product standards and design procedures through leadership of efforts in process, and project development.

- **CAD Modelling and Drafting**: Using CATIA, made and tracked 2D and 3D models of automotive structures to ensure correctness in both new and old product drawings.
- **Finite Element Analysis (FEA):** Stress and lifespan assessments were the main emphasis of the FEA that was carried out in CATIA for structural analysis.
- **Research Fellow**: Constructed CATIA CAD models of automotive structure and used ANSYS for thermo-structural FEA.

CAE & SIMULATION PROJECTS

- **Aerodynamic Performance Evaluation of NACA 4412 & NACA 23012 Airfoils**
  Performed steady-state CFD simulations to analyze lift and drag coefficients, pressure contours, velocity fields, and aerodynamic efficiency across varying angles of attack.
- **CFD-Based Design Optimization of Featured Wing Flap System**
  Conducted external flow analysis to study flow separation, pressure gradients, and aerodynamic loading; refined geometry to enhance lift-to-drag performance.
- **Structural Integrity & Failure Prevention Analysis of Aircraft Landing Gear**
  Executed linear and nonlinear finite element simulations to evaluate stress concentration, deformation behavior, contact interaction, and safety factors under realistic landing load conditions.
- **Thermo-Structural Simulation of High-Temperature Nozzle Assembly**
  Performed coupled thermal-structural analysis to assess temperature distribution, thermal expansion, stress gradients, and structural stability under elevated thermal loading.
- **Nonlinear Explicit Dynamic Simulation for Landing Gear Impact Assessment**
  Modeled transient impact loading scenarios to evaluate plastic deformation, energy absorption, and failure initiation under high-strain-rate conditions.
- **MATLAB-Based Numerical Modeling for Simulation Verification**
  Developed computational models for analytical validation, convergence studies, and correlation of numerical simulation results.
- **Designing and analysis of the delta wing**

- Conducted project focused on validating Non-slender Delta wing simulation data using CFD software against experimental results; moreover used Utilized CATIA V5, SpaceClaim 22R1, EXCEL, and CFD for 3D modeling, geometry clean-up, meshing, pre-processing, and post-processing
- 3D modeling accomplished in CATIA V5, with clean-up facilitated by SpaceClaim 16.2 Simulation conducted using CFD

- **Grapling Robotic arm for ENVISAT Satellite**

- Designed 3D model in Solidworks and simulated a robotic arm for Satellite manipulation, enhancing precision through advanced kinematics model
- improved trajectory accuracy by the dynamic analysis and tuning control system.

- **Design, Simulation & Analysis of a Space Robotic Manipulator (6DOF)**

- presented a comprehensive study on the design, modeling, and control of a robotic arm for debris manipulation in a space environment.
- developed a systematic approach to adapt the robotic arm for space conditions, performed a detailed kinematic and dynamic analysis, and outlined a trajectory planning and simulation process that utilizes both Matlab and Simulink for precision and reliability.

- **Omnidirectional Robot's model design, obstacle avoidance and visual tracking**

- developed a comprehensive simulation model of an omnidirectional robot using MATLAB and Simulink. The project encompassed various aspects including kinematics, dynamics, control algorithms, and trajectory planning.