

# SIRI VENKATA NAGA GOPI

Mechanical Engineer with 1 year of Experience into CAE



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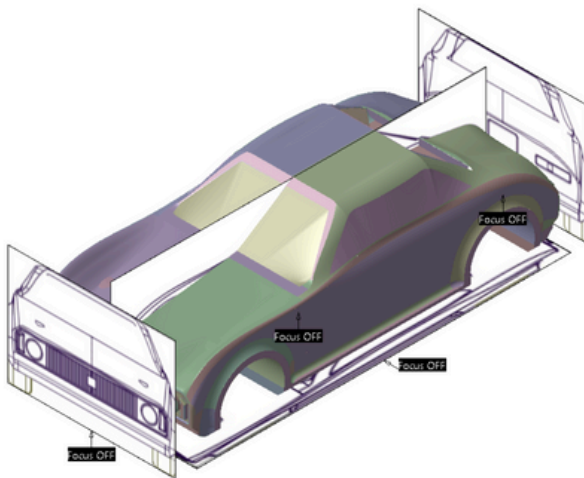


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## PROJECTS PORTFOLIO

### CAR CRASH ANALYSIS

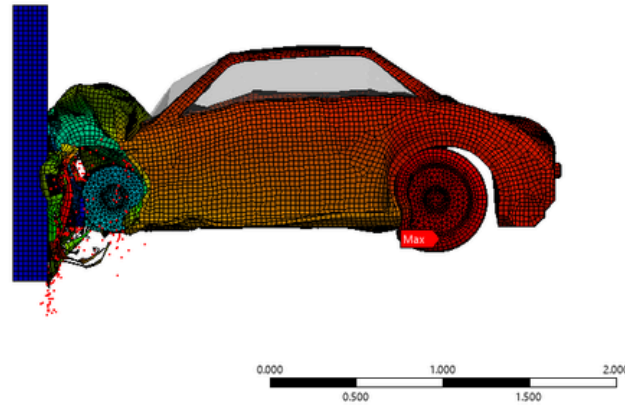
BEFORE



AFTER

A: Ti-6Al-4V Frontal  
Total Deformation  
Type: Total Deformation  
Unit: m  
Time: 1e-002 s  
Cycle Number: 163935  
04-02-2025 16:55

0.80009 Max  
0.71119  
0.62229  
0.53339  
0.44449  
0.3556  
0.2667  
0.1778  
0.088899  
0 Min



#### What?

- Explicit Dynamic Crash Analysis of a Car Body to evaluate its crashworthiness.
- **Objective:** Assess the impact resistance of high strength-to-weight ratio materials in automotive structural applications.

#### How?

- **Software Used:** CATIA V5 for design and ANSYS Explicit Dynamics (AUTODYN) for crash simulations.
- Designed a coupe car body in CATIA V5, maintaining real-world geometry and structural integrity.
- Converted the model into a FEA-compatible format for explicit dynamic analysis.
- Conducted crash simulations for **frontal**, **side**, **rollover**, and **car-to-car impacts**.
- **Materials:** CFRP T700, Ti-6Al-4V, and Al 7075-T6.

#### Output

- **CFRP T700** demonstrated superior crashworthiness with high strength, minimal deformation, and effective stress resistance.
- Verified constant total energy during impact, optimizing material selection for safety and durability.
- Provides valuable insights for next-gen vehicle designs, balancing safety, performance, and sustainability.