Welcome , and thank you for taking the time to view my portfolio. The goal of this portfolio is to give you a deeper insight into my experiences and skills i have gained over my recent history

Project Title: Go-Kart Design and Manufacturing

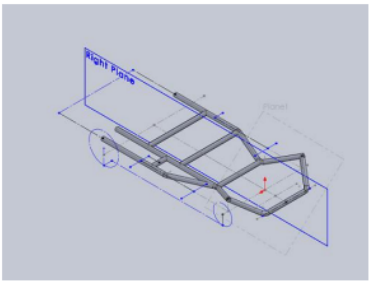
Project Overview:

As part of an independent project, I undertook the design and fabrication of a Go-Kart. This project involved intricate calculations performed manually, alongside the utilization of SolidWorks for the chassis design. The Go-Kart was equipped with an Original Equipment Manufacturer (OEM) CVT engine, and meticulous attention was given to both performance and safety aspects.

Frame Design:

The primary objective in designing the Go-Kart frame was to strike a balance between weight, structural integrity, and safety. The frame needed to be competitive while ensuring driver safety. Technical requirements for competitions guided the frame design, with a strong emphasis on component integration.

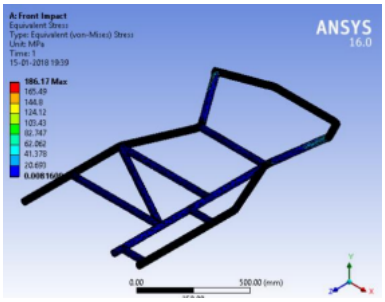
MODELLING OF SKETCH IN SOLIDWORKS

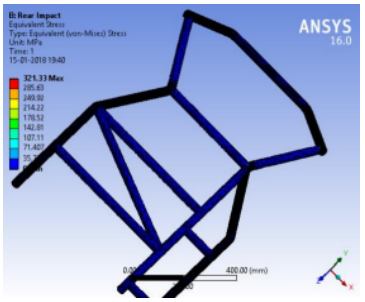


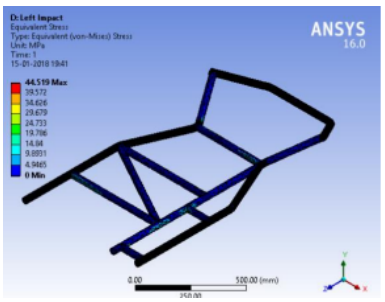
Detailed Design:

The frame was divided into two main sections: the front cockpit, which housed the steering, seating, and pedals, and the rear section, which incorporated the transmission and brake assembly. Safety was a priority, leading to the inclusion of a firewall to separate these two sections.

Finite Element Analysis (FEA):





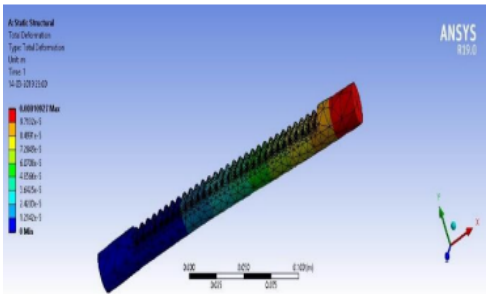


To assess the frame's stability under extreme conditions, Finite Element Analysis (FEA) was conducted using ANSYS Simulation Software. This analysis aimed to ensure the frame's durability and structural integrity during operation and racing scenarios.

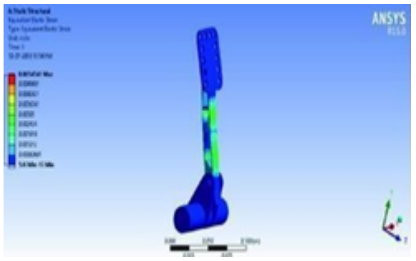
Body Design and Composite Materials:

SolidWorks software was utilized for designing the body, with a focus on minimizing weight. Fiber Reinforced Plastic (FRP) was chosen for its lightweight properties, ensuring optimal performance.

Steering System:



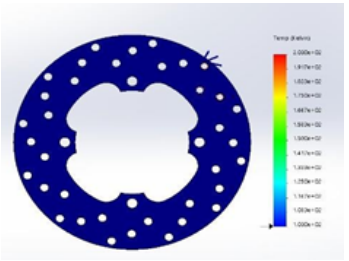
The steering system was designed with simplicity and safety in mind. Key considerations included center alignment, track width, human effort, and desired steering response. To meet cost and weight limitations while maintaining design simplicity, an Ackerman steering arrangement with a limited number of joints was selected.



Braking System:

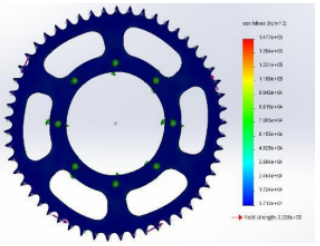
The braking system was engineered to maximize performance while minimizing cost and weight. Key advantages of the hydraulic disc brake system included a higher coefficient of friction and consistent braking power regardless of weather or road conditions.

Analysis of Disc Brake:



The thermal analysis of the brake disc was conducted using ANSYS software, taking into account temperature and convection as boundary conditions. The results indicated that the disc remained within a safe temperature range, preventing pad wear and maintaining effective braking.

Transmission:



Power transmission from the engine to the rear axle was achieved through a removable chain and sprocket system. The sprocket ratio was adaptable to the track configuration to optimize engine output.

Engine Mounting and Design:

The design incorporated a standard Vespa LX engine, considering dimensions, ergonomics, and seating. The engine placement beside the driver's seat enhanced the Kart's maneuverability. A specialized engine mount and vibration-dampening materials were employed to reduce vibrations and enhance ride comfort.

This Go-Kart project showcases my proficiency in vehicle design, structural analysis, and system integration. It demonstrates my ability to address complex engineering challenges while prioritizing performance and safety.