Lab-7A:
FEA of Chassis

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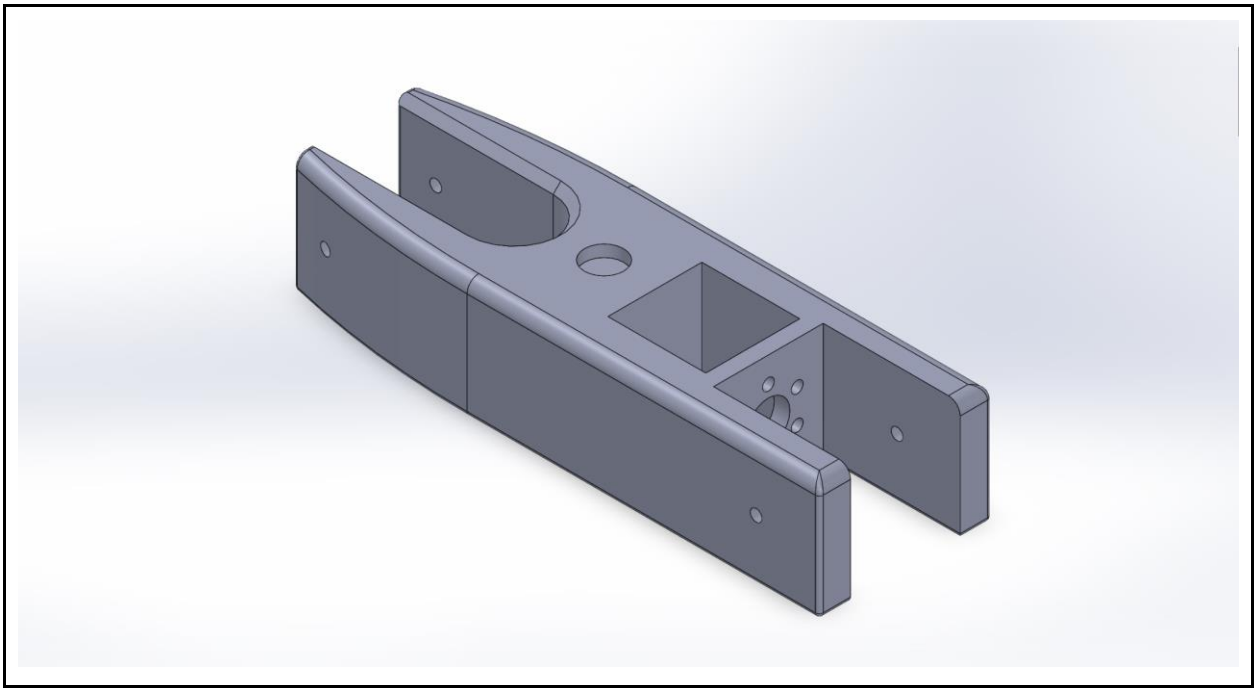


Figure 1: Initial model of the chassis. Includes all holes and fillets/chamfers.

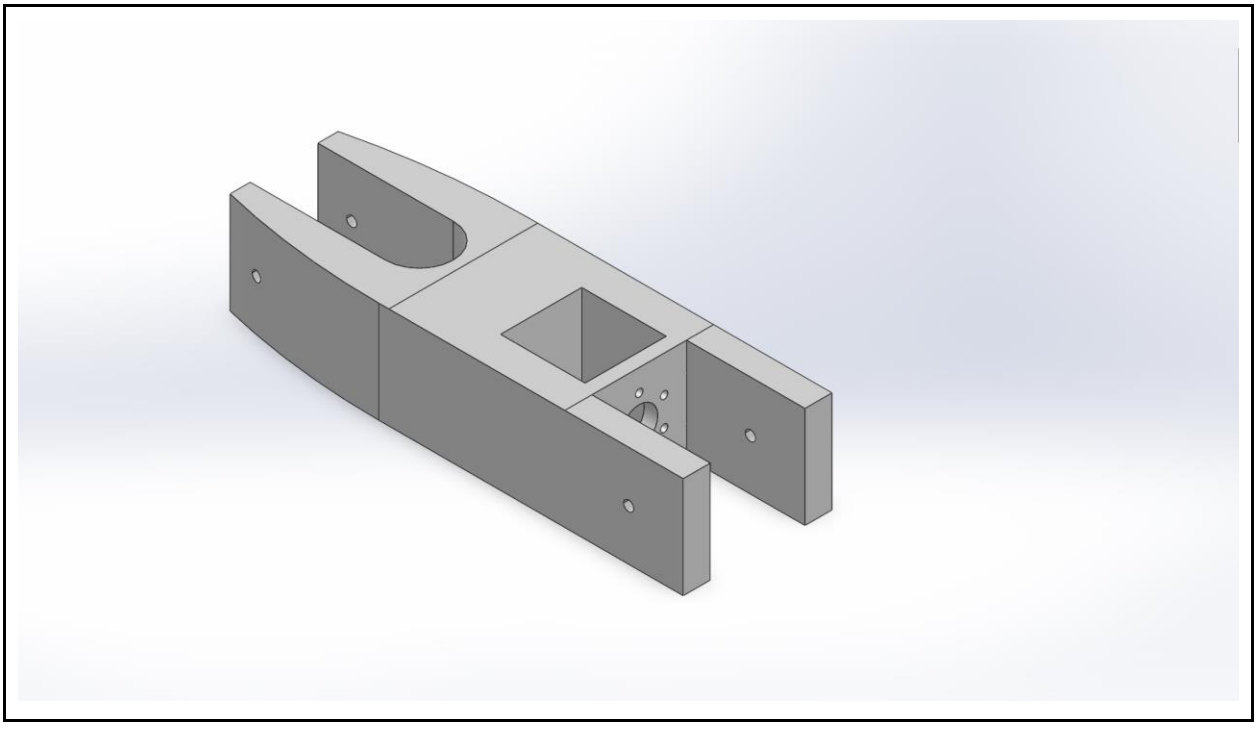


Figure 2: Simplified model of the chassis. All fillets/chamfers, the indent at the top of the model for mounting the solar panel, and were removed. Split lines were added to the top of the chassis and the axle holes for FEA analysis.

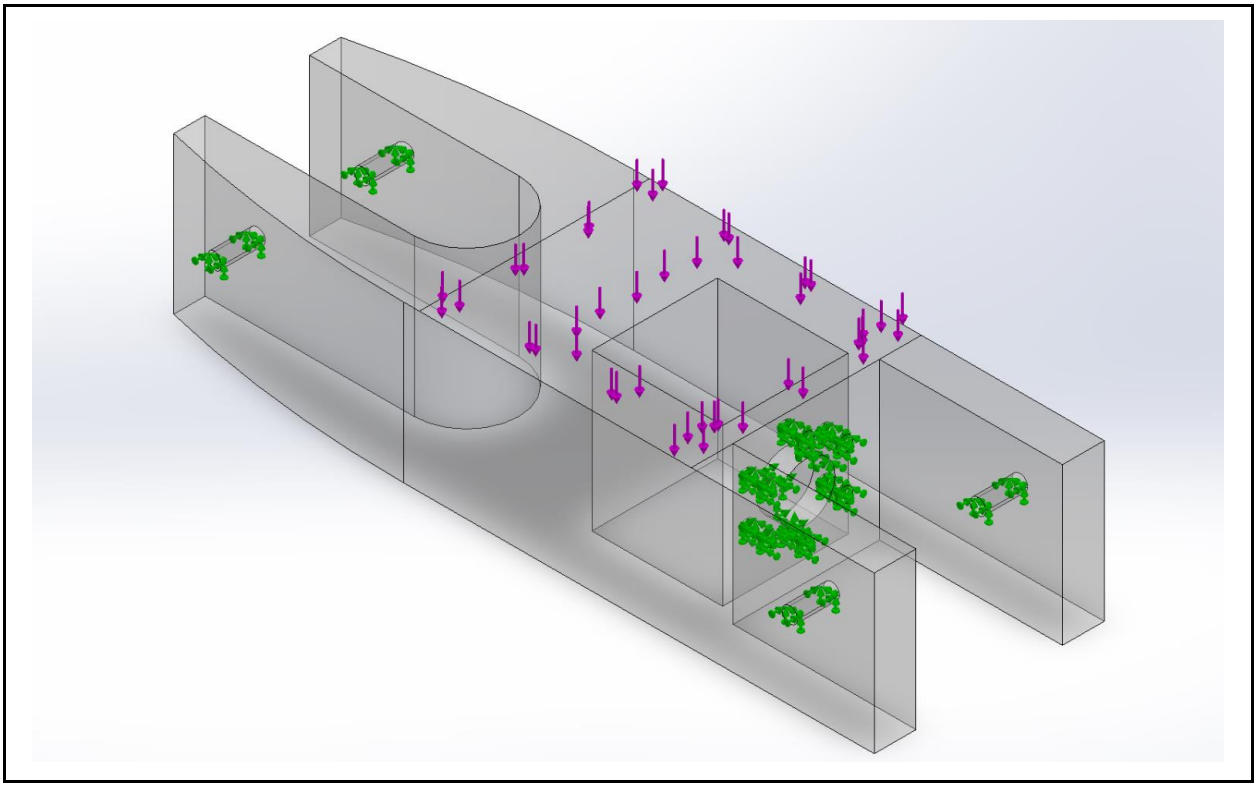
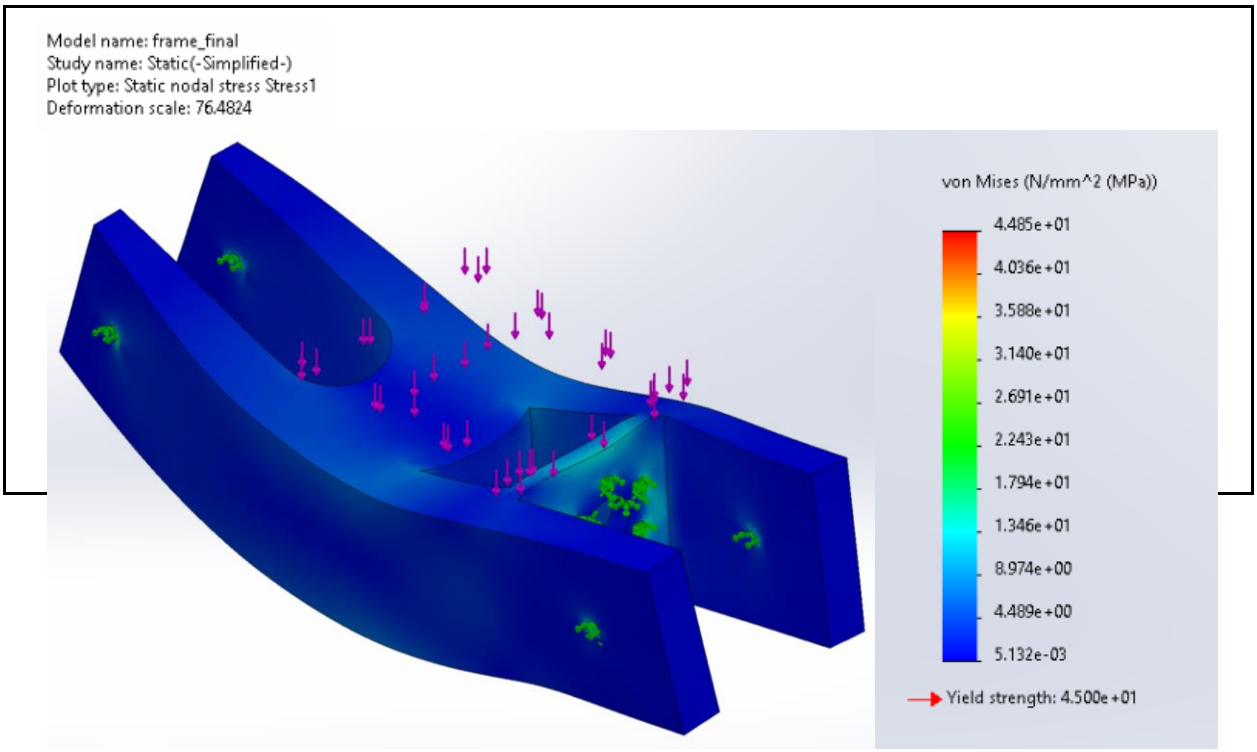


Figure 3: FEA model showing the applied BCs (Fixtures and Force). Fixtures were placed in the axle holes, including the holes for mounting of the motor. I only fixed the top side of the axle holes to resist the upward forced applied by the axles when a downward force is applied to the top of the car as shown. The force was applied to the center of the chassis using split lines.



The maximum load the chassis could handle was approximately 1730N of force before reaching the maximum yield strength of 45 N/mm^2.