Overview of the project

- *Investigated epoxy carbon fiber and glass fiber/polypropylene composites for bone fracture fixation plates, aiming to enhance orthopaedic outcomes.*
- *Designed 3D models of fracture bone fixation plates and screws in SolidWorks, reduced plate thickness by 4mm making them lighter and more comfortable for patients.*
- *Reduced predicted bone plate failure rates by 13% through comprehensive FEA, increasing reliability.*
- *Conducted Finite Element Analysis (FEA) using ANSYS, simulating stress-strain distributions and total deformation under various loading conditions.*
- *In this analysis I considered different scenarios and accordingly impact velocities (up to 10 m/s) representing different impact cases in real-world situations.*
- *Achieved 95% accuracy in simulation results by validating against existing experimental data.*
- *Carbon Fiber displayed (up to) 20% decrease in bone stress compared to conventional materials, resulting improved bone healing advancements.*
- *Presented a detailed 60-page report and presented a 10-slide presentation to supervisors and external professors, highlighting the project's significance and impact.*