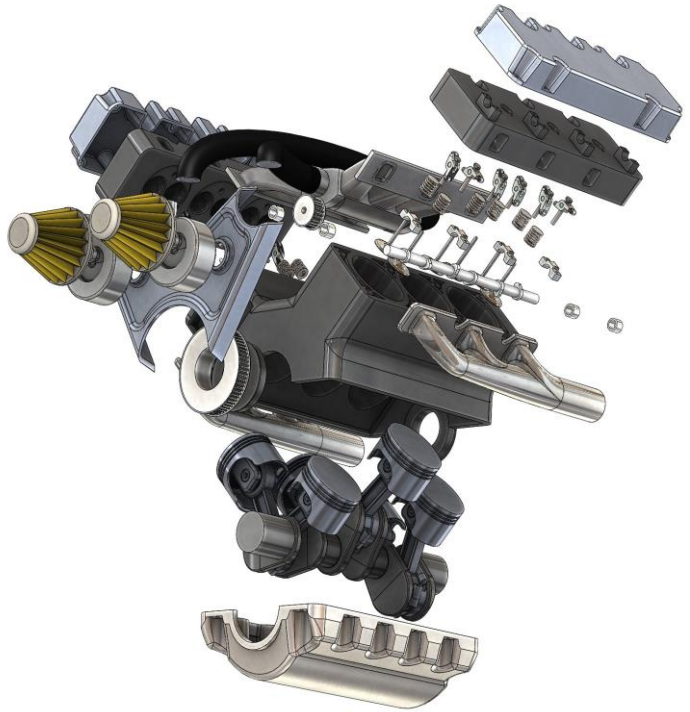
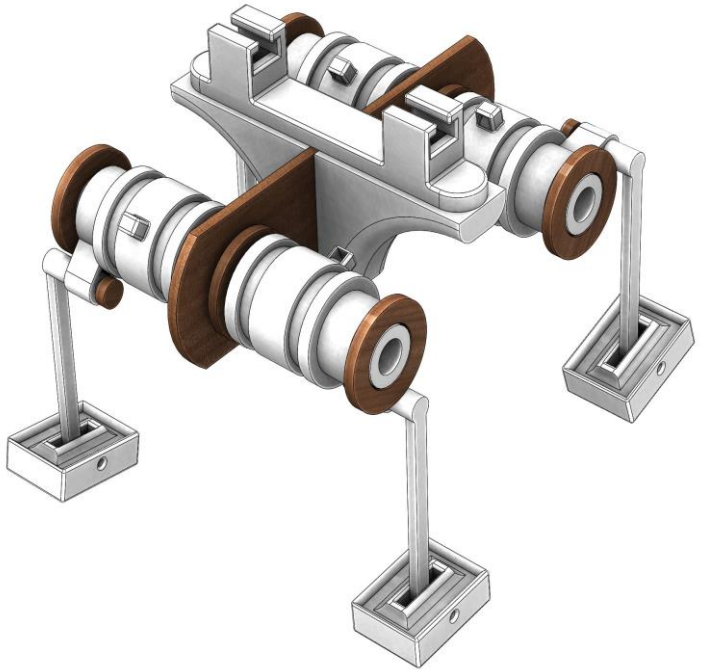
Design Projects

SolidWorks, Inventor



Honda V6 Functional Engine

Inspired by a 2.8 L V6 Twin Turbo Engine found within sports cars, this original 165 kg functional model comprises of over 196 individual parts assembled to replicate an internal combustion four-stroke engine.



Bio Inspired Mechanical Walker

Using tension as force, the mechanisms behind this model are simply an ideation of the way in which animals achieve propulsion and motion with a constant shift in center of gravity.

Functional Windmill Pump

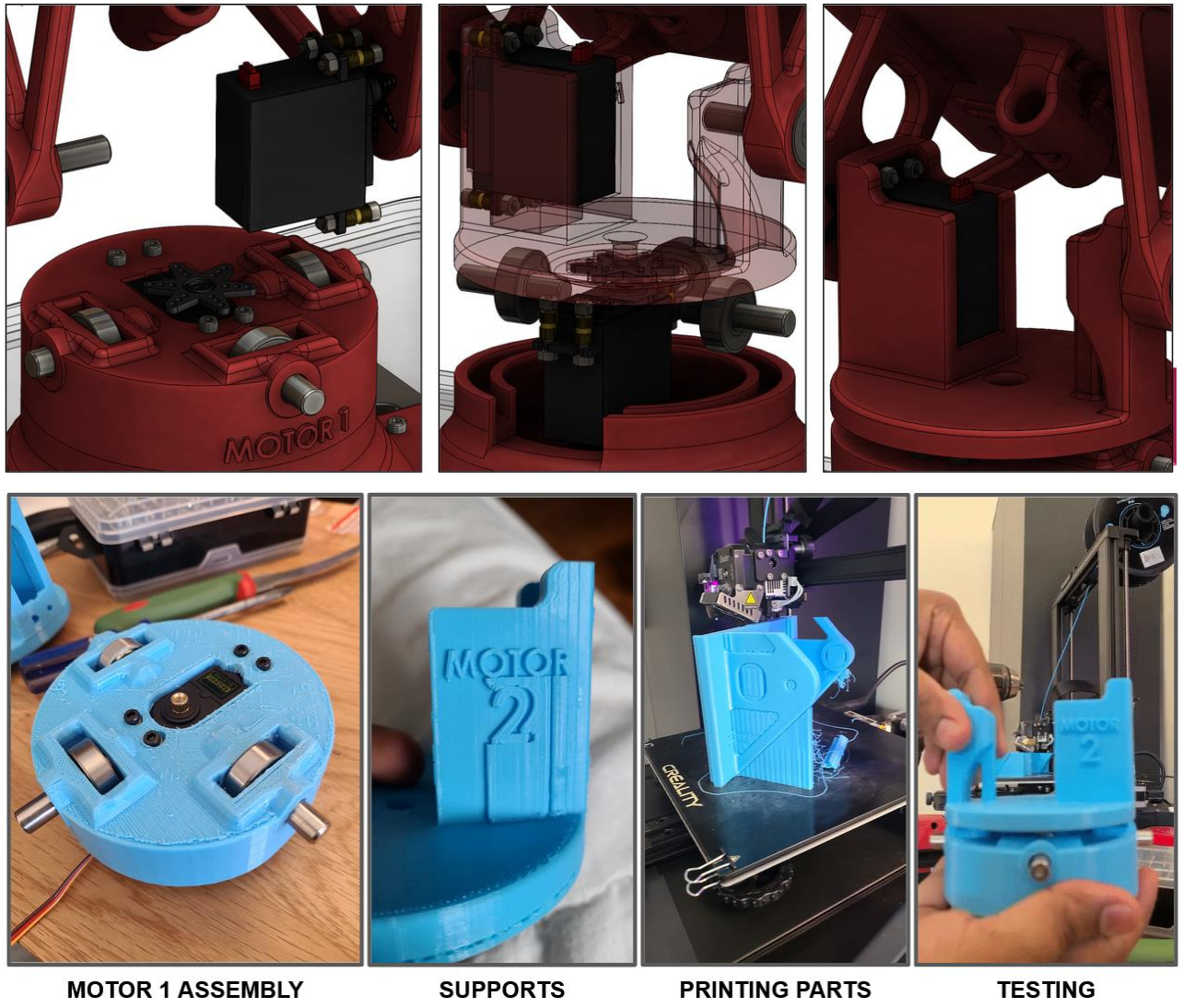
Using wind as its input energy, the gearbox of this windmill pump can effectively extract water from underground using a reciprocating pump. All calculations and FEA (Finite Element Analysis) of components could be found in my website.

Assembly Projects

SolidWorks, 3D-Printing, Arduino

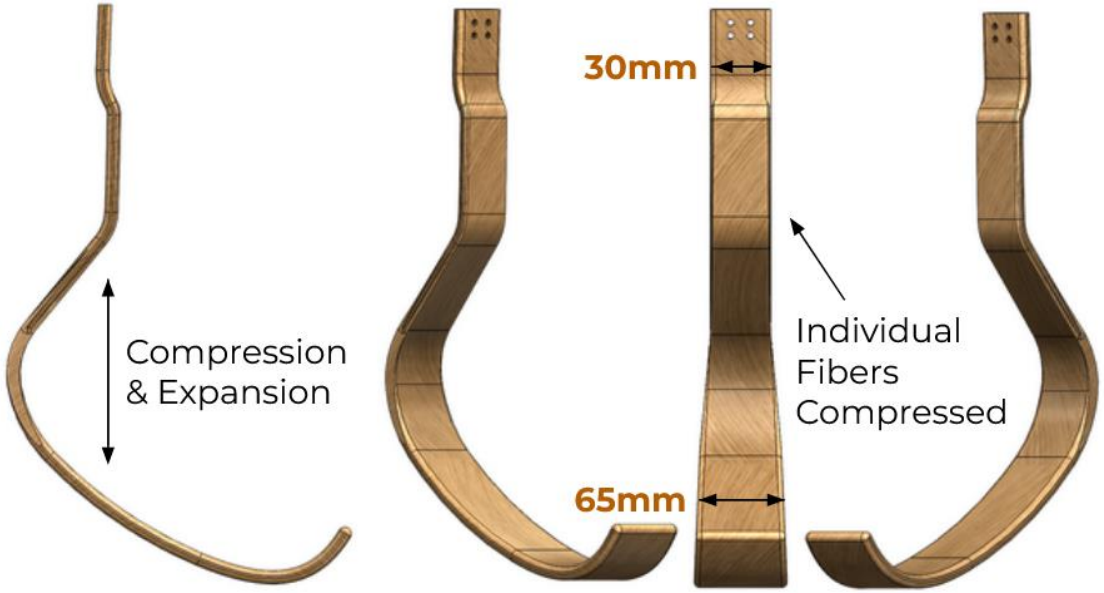
Dual Axis Solar Tracker

Designed a Floating IoT-based Sun Tracking Solar Panel with a dual-axis motor system for precise sun tracking and remote performance monitoring. Optimized design to be most compact, 3D-Printed parts for prototype and wired electronics for IoT interfacing with Arduino.



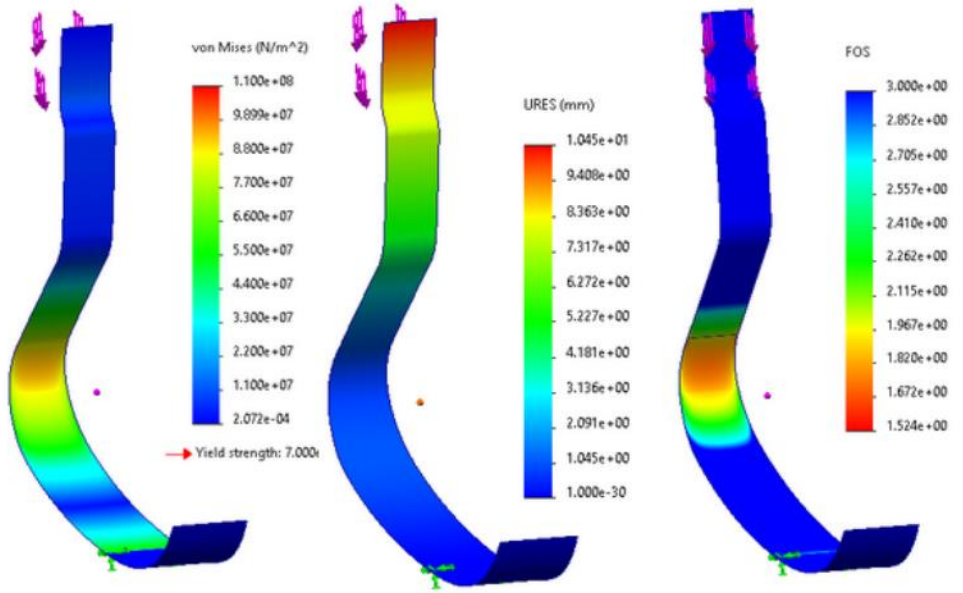
Simulation Projects (Part I)

SolidWorks Design & Simulation



J-Shaped (Composite) Running Blade

Developed a composite J-shaped running blade designed for high-performance male runners, targeting an average height of 5’10”. The blade was constructed using hemp fibers, chosen for their strength and sustainability. The design focused on optimizing performance and comfort, ensuring it met the rigorous demands of competitive running.

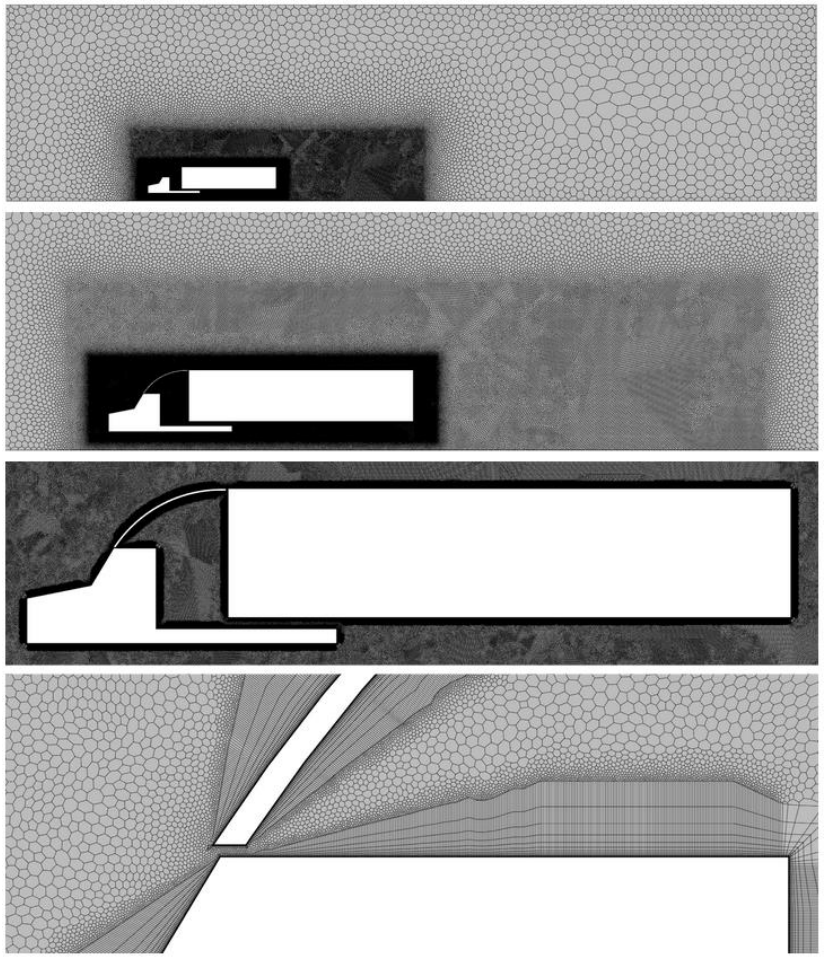


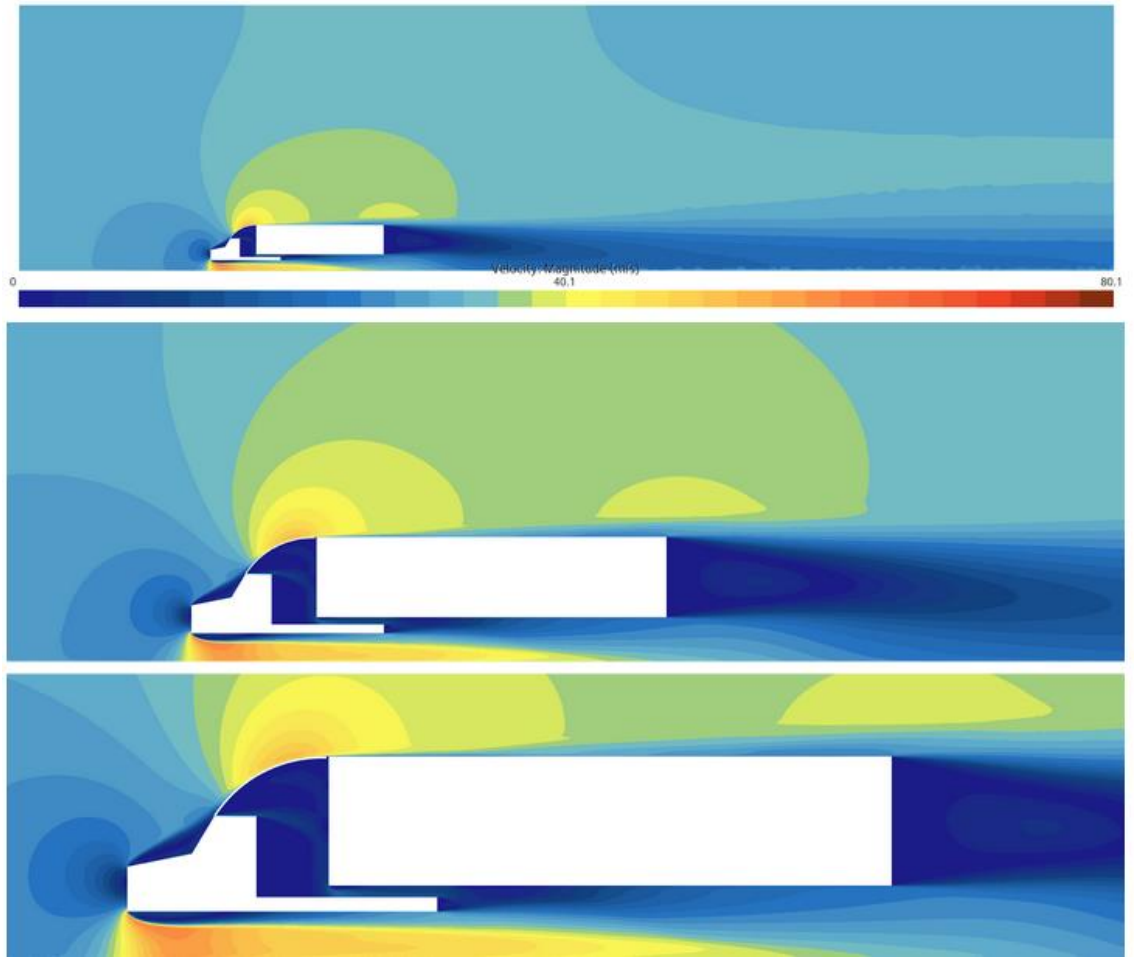
SolidWorks Simulation

In SolidWorks, we performed a comprehensive simulation on a single layer of compressed hemp fiber to analyze its mechanical properties. The simulation focused on key metrics such as von Mises stress, Yield Strength, and deformation under various loads.

Simulation Projects (Part II)

StarCCM+ Simulation (CFD & FEA)





Truck Fairing Design & Simulation Study for Increasing Fuel Efficiency of Trucks

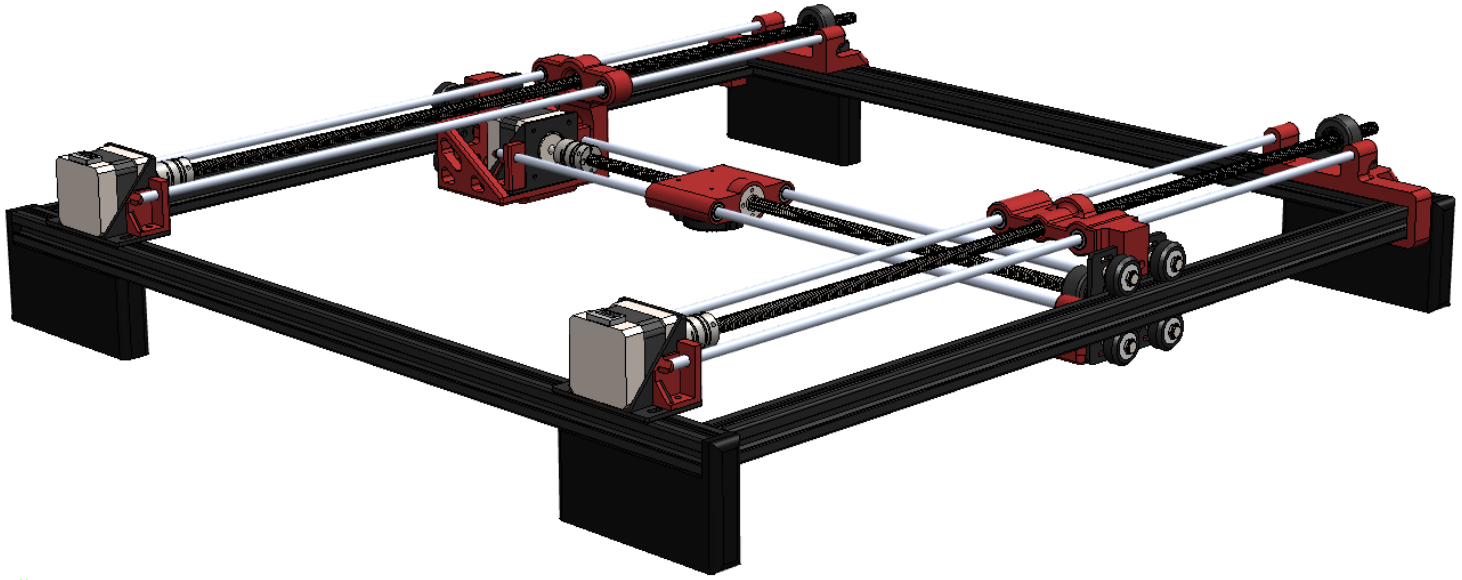
Used StarCCM+ to conduct CFD & FEA analyses on a truck fairing design aimed at boosting fuel efficiency. By optimizing mesh quality, I ensured precise simulations that demonstrated significant aerodynamic improvements.

Freelancing Projects

Design, Parts Sourcing, Assembly, PCB Circuits, Testing

Manufactured: Galaxy S9 Phone Case

Engineered a sleek, carbon fiber Samsung Galaxy S9 phone case in SolidWorks for a client's mass manufacturing need, leveraging the Laminator software to conduct advanced composite simulations and optimize durability and performance.



Assembled On Site: Cartesian Robot for Mold Mitigation

Developed a Cartesian Robot for Mold Mitigation in vertical farming, designed in SolidWorks and refined through multiple in-house 3D-printed iterations. The parts were selected, sourced, and assembled by myself to create an effective robotic system. The robot was controlled by a microcontroller and a custom PCB circuit designed using Autodesk Eagle, ensuring reliable performance in agricultural settings.