



Team 22: Solar Racing Car Chasis

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Objective and Background

- This project was proposed by the GVSU Solar Racing Team with Dr. Krug and Ryan Aldridge as the sponsors.
- The main goals were to design and build the suspension, steering, and braking systems. This car is intended to be raced in the 2027 American Solar Challenge and shown at the Michigan International Auto Show

Specifications

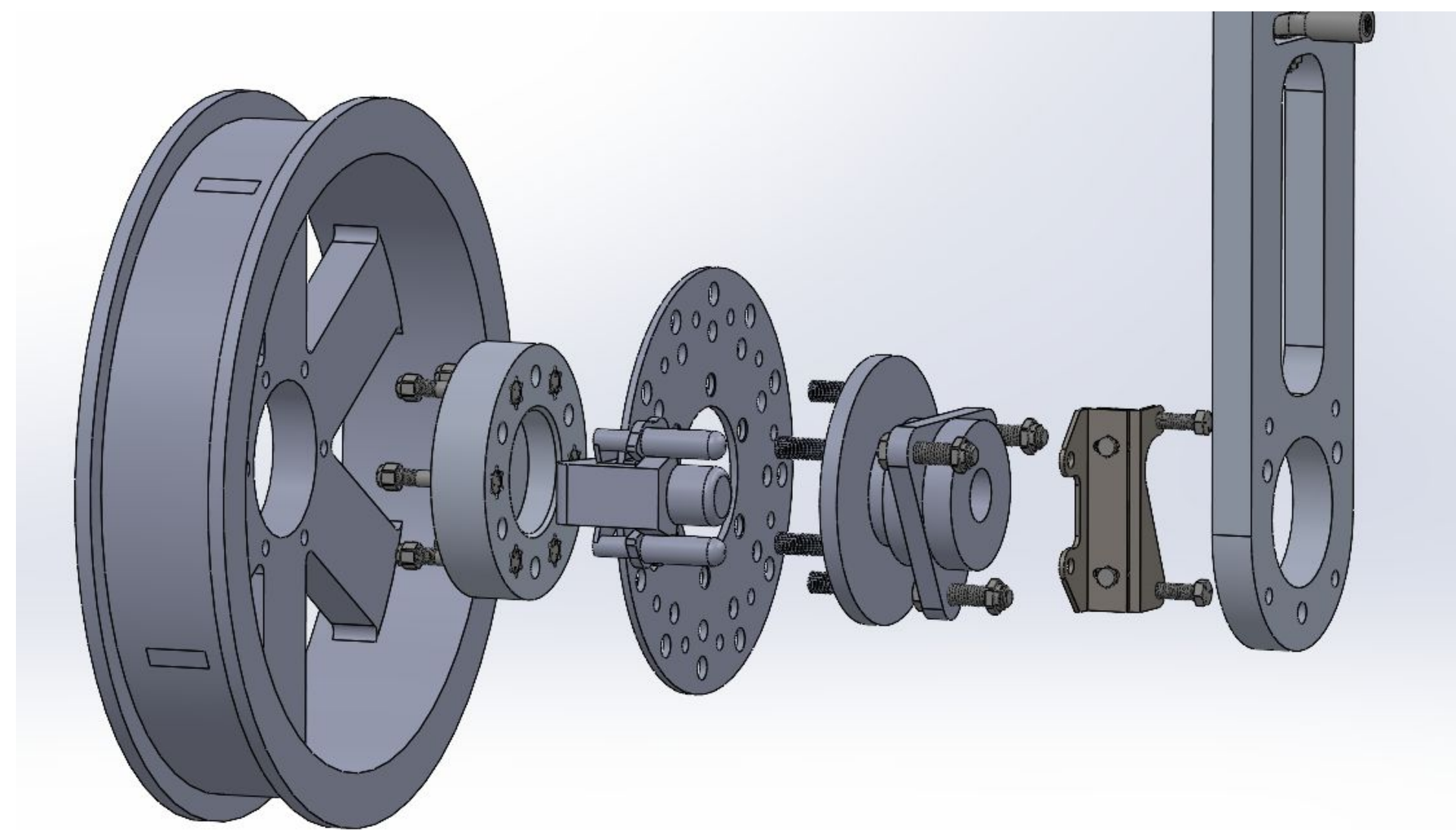
- Initial Budget: \$2000
- Final Budget: \$3000
- Using existing parts provided by the solar racing team, build the suspension, steering, and braking system for the GVSU Solar Racing car.

Main Challenges

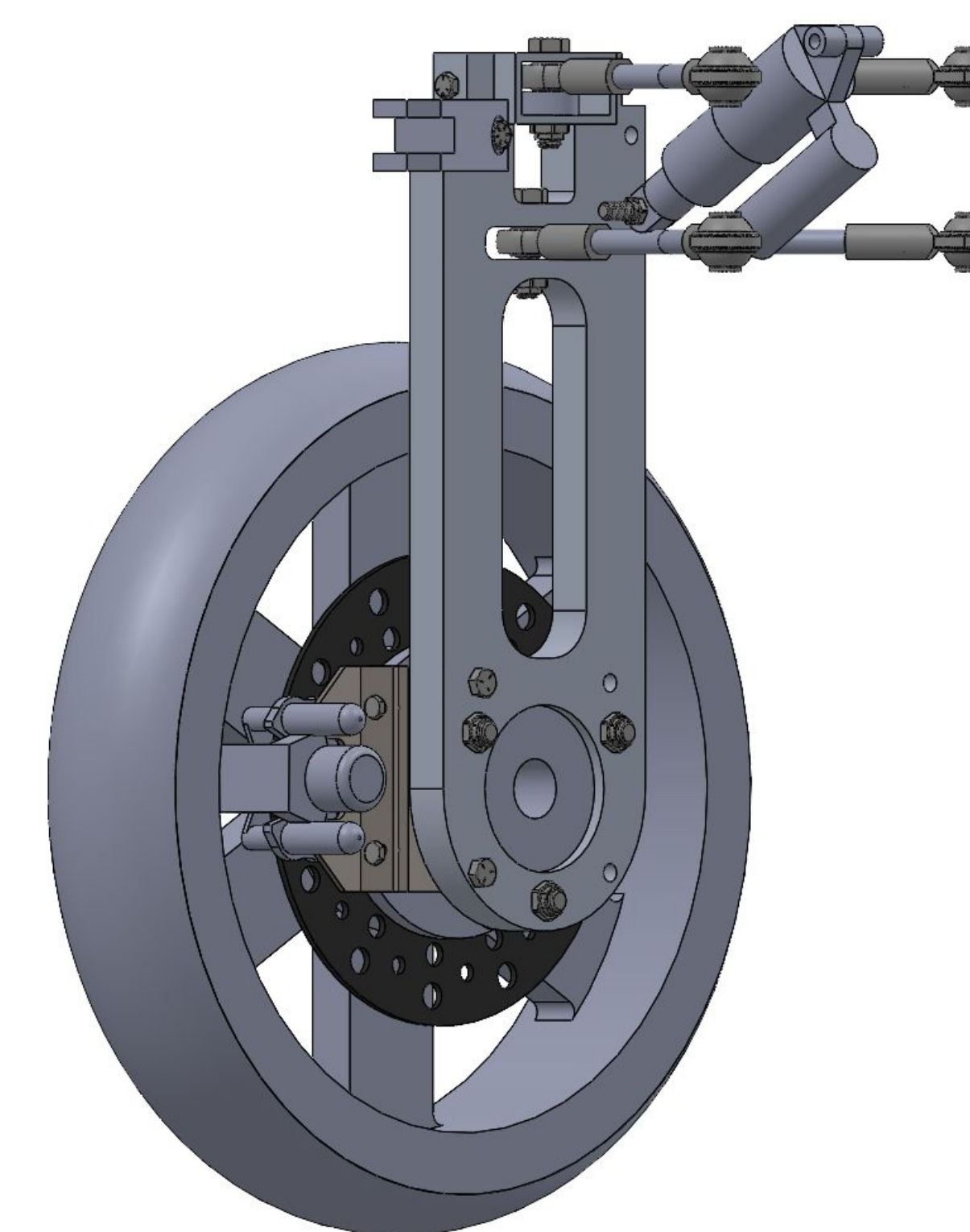
- The shell provided by the solar team has very limited space and heavily influenced all design choices.
- The initial budget was not enough to complete all three systems and many cost saving measures were taken to try and alleviate this.

Suspension and Brakes

- The suspension system included the a-arms, shocks, knuckles, hubs, and a full design of the braking system
- The wheel assembly and knuckle were designed first in a ground up approach



- The full assembly includes adjustable a-arms to allow for corrections to toe and camber. While the exact placement of these components is not reflective of what is ideal in most vehicles, the space restriction made this the best use of the existing parts.
- The braking system was designed alongside the suspension system as the two are reliant on the knuckle design for mounting.



Steering

- The steering system involved created the steering wheel, buying a collapsable steering column, a rack and pinion, and a tie rod to connect to the knuckle while allowing for vertical motion as the car moves.



- The steering system in practice has worked as intended and allowed for the car to be effectively turned without excessive input from the driver which was a concern without any form of power steering.

Conclusion

- This project has resulted in the GVSU Solar Racing team having a full chassis with suspension, steering, and brakes since the team's creation.
- It has provided a working platform for the Solar Team to move forward in adding electrical components, racing the car, and securing sponsors.
- Special thanks to Jared Bergeron, Dr. Baine, the GVSU FSAE team, and Patrick Vidovic