

Design Team Members

Joshua Crepeau (Team Lead), Salomon Chavez (Procurement Office), Frank Maldonado (Safety Officer), Amanda Massey, Donovan Caruso, & Cesar Miss

NMT BattleBot Team #2

“I Scream Slamwich”

Background/Objective

The NMT Battlebots Competition consists of two weaponized and motorized bots brawling for victory. The winning bot must immobilize the competitor or inflict the most damage in 3-5 minute rounds. The Team was tasked with designing a bot that is durable, lightweight, agile, can take a beating and is capable of inflicting significant damage on the opposition's bot.

Design Specifications

- Overall weight has to be less than 3 lbs.
- Design and create with a budget of \$700.
- Dallas Area Robot Combat (DARC) rules as a reference for competition guidelines which include weight class and safety requirements.

Previous Work

- Designed a new battlebot design.
- Began bot body prototyping on 3D printer and adjusted to maximize weight reduction.
- Coded and wired Electrical components to begin testing.
- Designed armor wheel covers if weight allows for implementation.

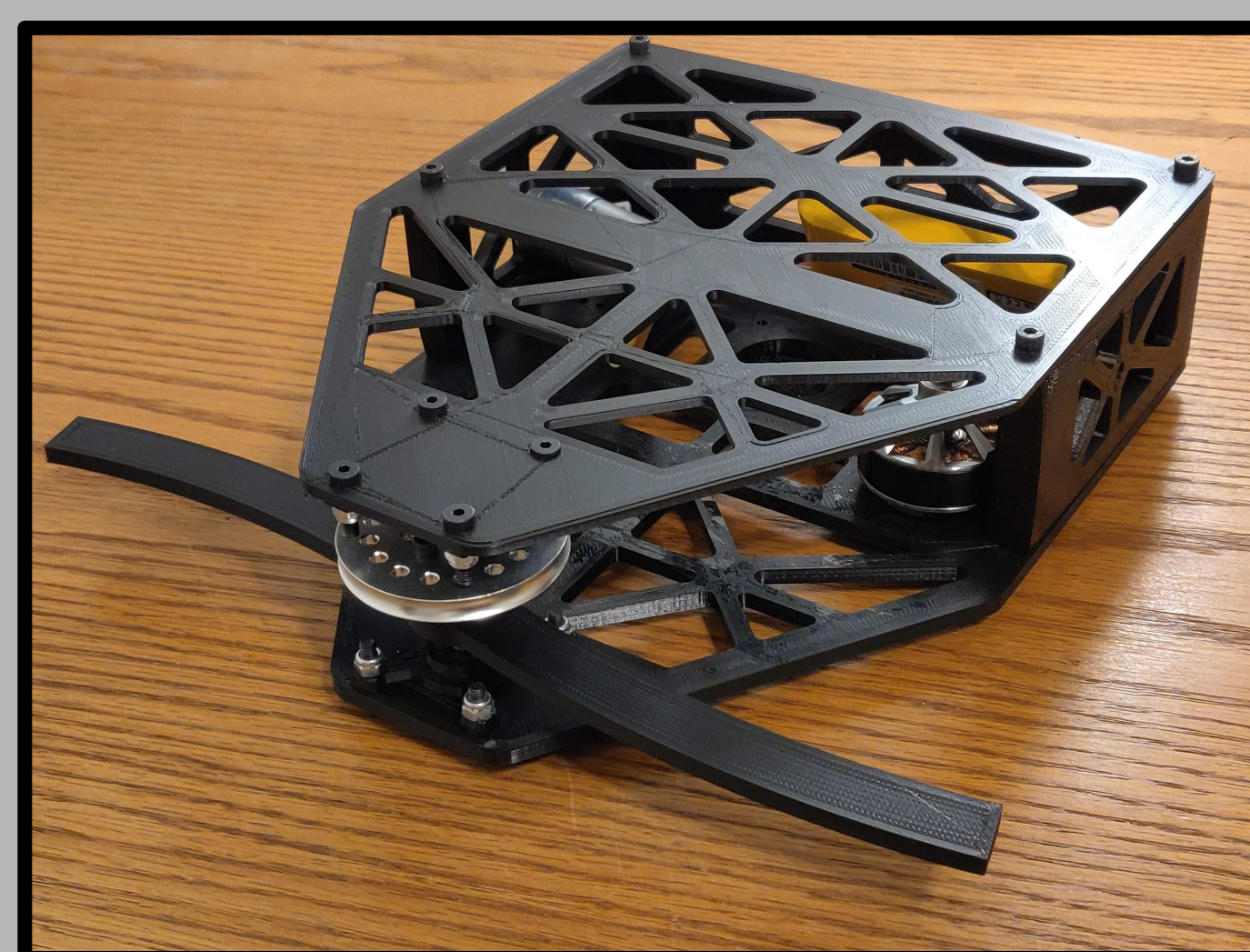


Figure 1: (Above) demonstrates the Fall 2020 prototype assembly with the weapon pulley, weapon motor, weapon blade, battery and drive motors.

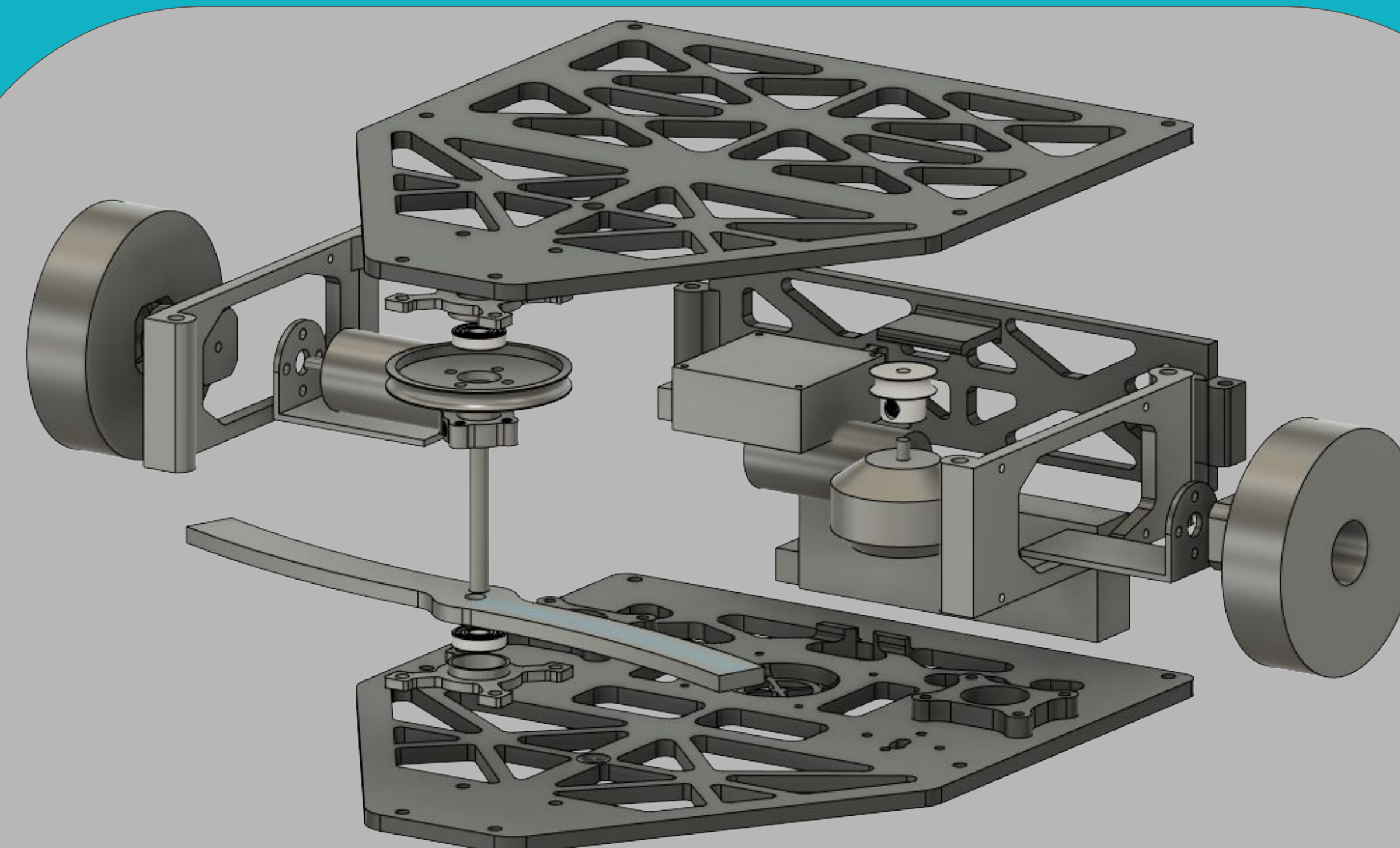


Figure 2: (Above) An exploded view of the current CAD assembly. With a large rotating blade to attack, reinforced armour to protect exposed wheels, and a light, nimble frame to move quickly around the arena.

Overall Design

- An impact resistant 3D printed chassis for maximum strength to weight ratio.
- Pololu 25D metal gear motors to provide reliable torque for drivetrain power.
- Gantt ML3508 brushless motor to power the weapon blade capable of spinning the weapon at an estimated 4,000 RPM.

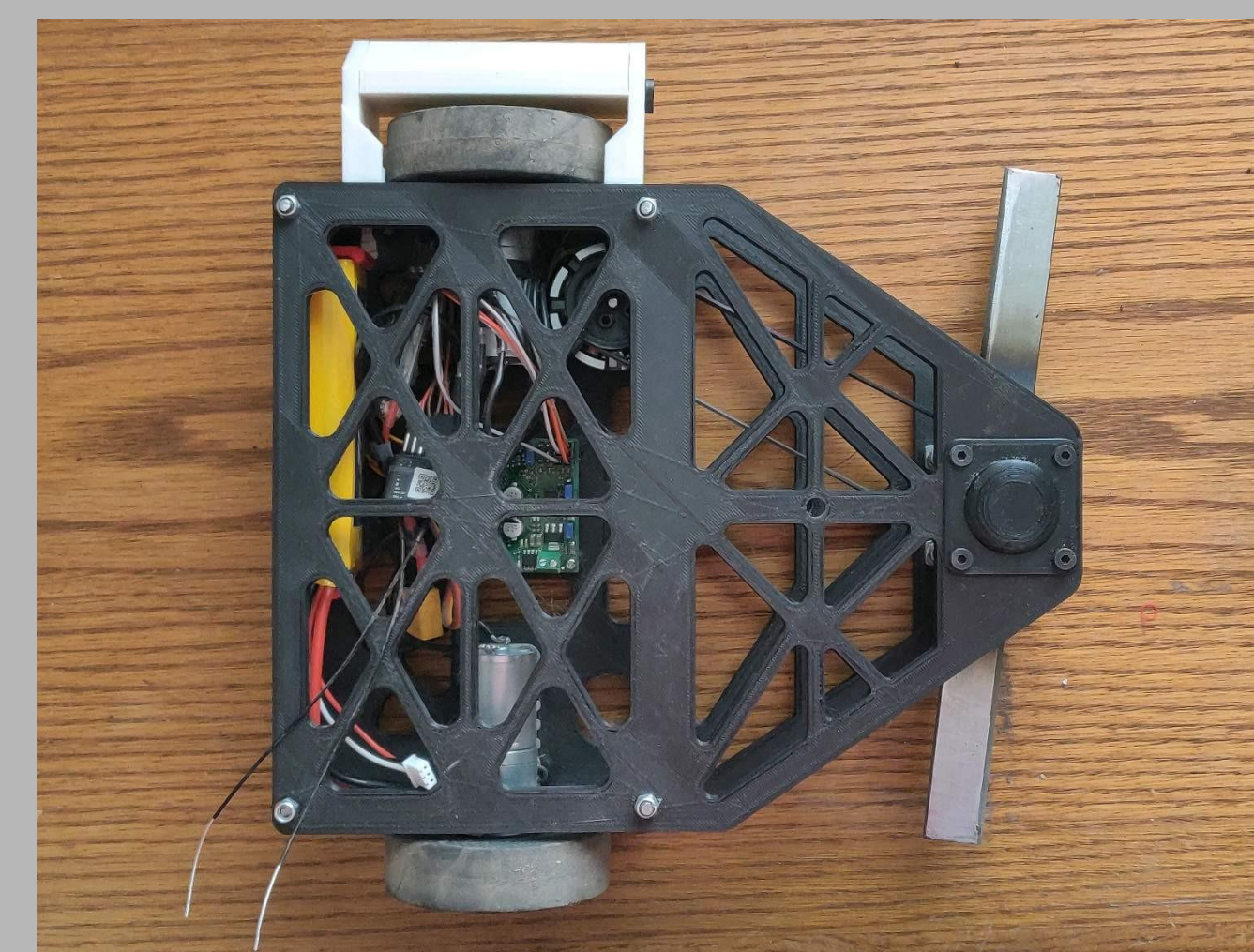


Figure 3 (above): Finalized version of the Battlebot with armor attached. This demonstrate the interchangeable design for the armor.

Spring 2021 Semester Progress

Testing continued for Spring 2021

- Chassis was updated to resolve spacing issues and weight reduction.
- Armour was updated for better protection of exposed wheels
- Weapon Blade was installed which consists of two metal pieces welded together and sharpened to slice the opponent.
- Wiring was updated for better cable management and includes a safety on/switch to cut power from battery.

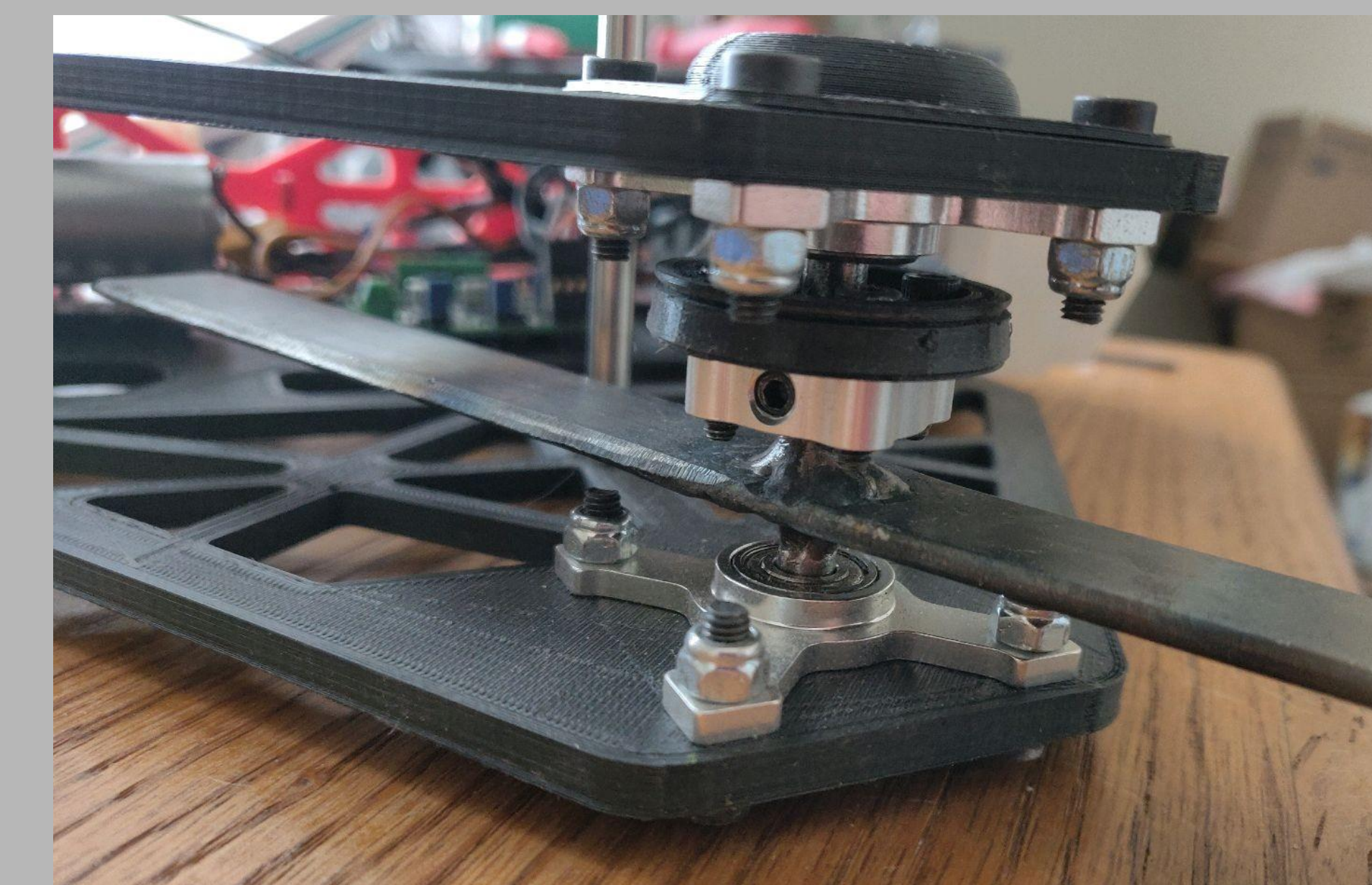


Figure 4: (Above) a close up view of the weapon configuration with the current blade.

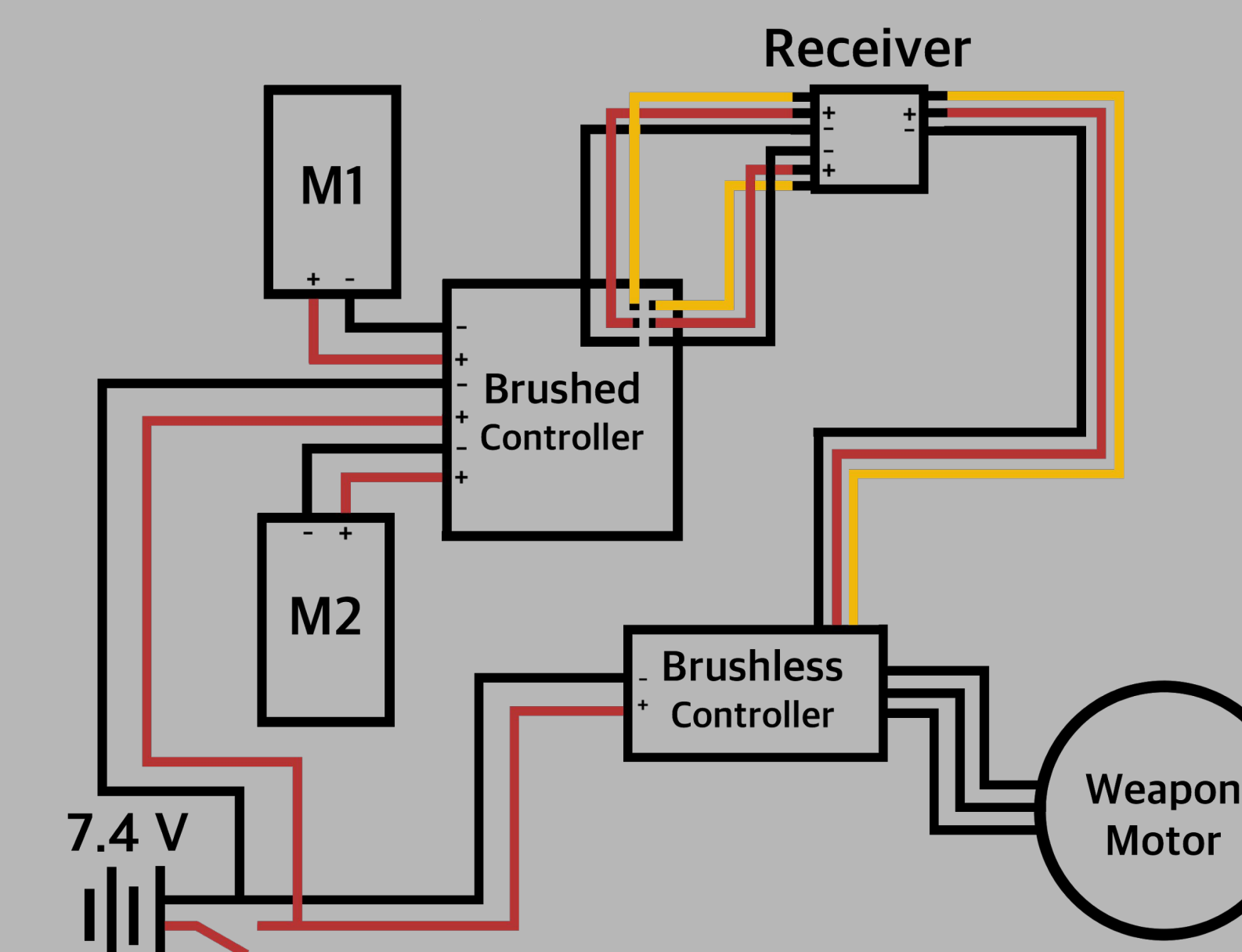


Figure 5 (above) Demonstrates the current wiring diagram that is used to power and control the drive motors and weapon motor. This version includes a switch for safety purposes during competition.

Results/Conclusions

“I Scream Slamwich” was prepared for battle in the arena on April 3rd, 2021. The Bot was able to take on “Saber Tooth” and “Doomba” for the competition. “I Scream Slamwich” was very dominant over “Saber Tooth”, but the chassis failed during the final battle against “Doomba”.

References

DARC Rule Book

Acknowledgements

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