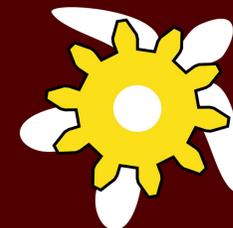




# Combat Robotics (CMBT)

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## Combat Robotics

The Combat Robotics Team (CMBT) designs, manufactures and competes using combat robots in the 3 & 30 lb weight classes. In combat robotics competitions, robots use kinetic weapons such as flywheels and saws to disable the opposing robot. Essentially, it's a 3-minute fight to the death! If no robot is KO'd within the 3 minute match, a judging panel determines the winner.

**All competitions strictly prohibit projectiles, explosives, or entanglement devices. This preserves the spirit of the competition!**

## Team Breakdown

### Weight Classes:

- 30 Pound (The Big Gig)
- 3 Pound (Snapper)
- 3 Pound (currently unnamed)

### Sub-Systems:

- Weapon
- Chassis
- Drivetrain
- Electronics



Figure 1. A live BattleBots Competition [BattleBots]

## The Big Gig (30 lb)

- This is our oldest and heaviest robot.
- The Big Gig has an 8 lb, asymmetric vertical spinner weapon that is belt-driven.
- It uses a chain-driven tank drive system, allowing each side to be controlled independently.
- The chassis is made of segmented aluminum plates that bolt together for easy replacement.
- The chassis includes hardened steel forks for better control over competitors.
- The weapon and drivetrain are powered by three brushless motors, each with an independent ESC.
- All electronics are powered by two 6s LiPo batteries.

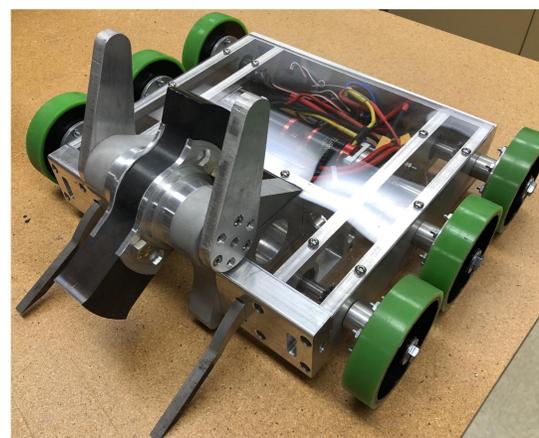


Figure 2. The Big Gig Fully Assembled.

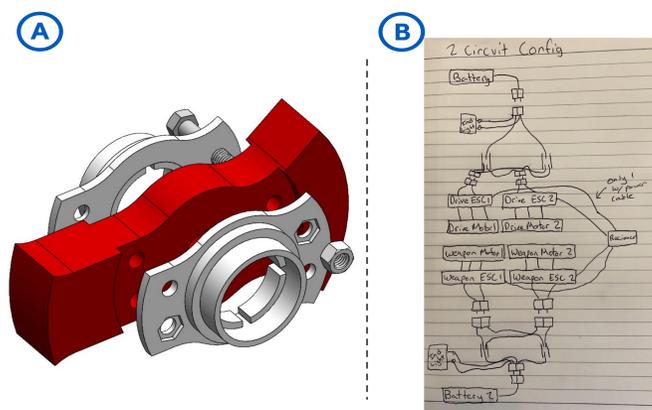


Figure 3. The Big Gig Weapon Assembly (A) and Electronic Block Diagram (B)

## Snapper (3 lb)

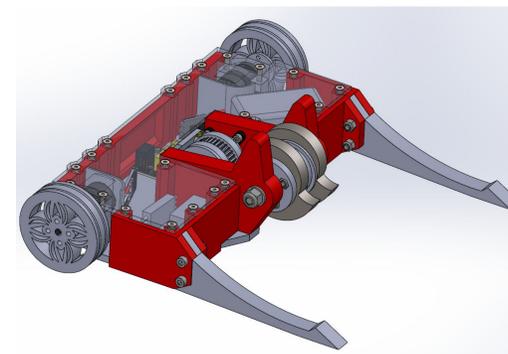


Figure 4. SolidWorks Rendering of Snapper.

Snapper is our 3lb vertical spinner. It uses its wide body and long control forks to protect our wheels, while giving us the ability to control the match by getting under our opponents and keeping their wheels off the ground. Snapper's main weapon is a 0.66 lb vertical spinner located at the middle front of the chassis. This weapon stores rotational energy to deliver precise and powerful impacts to our opponents. Snapper's chassis is made of a mix of soft, shock-absorbent TPU and hard, impact-resistant polycarbonate for maximum resilience.

## Snapper's debut

On December 13<sup>th</sup>, Snapper will compete in the Texas Robot Combat "Texas Cup" against other beetleweight (3lb) robots. Not only will this be Snappers debut, but it will be CMBT's first competition appearance!



## A Bot In Progress

We have begun designing a new 3 lb robot to be debuted next semester! (name TBD). This semester our team created the preliminary designs shown below.

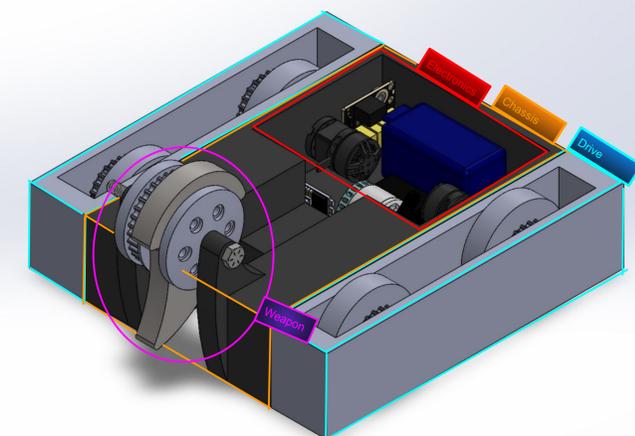


Figure 5. SolidWorks Renderings of unnamed robot

### Design focus:

**We want a big weapon-** this new bot will house a whopping 5-inch diameter vertical spinning disk capable of instantly disabling an opponent.

**Powerful drive –** this robot features a 4-wheel drive system for superior mobility.

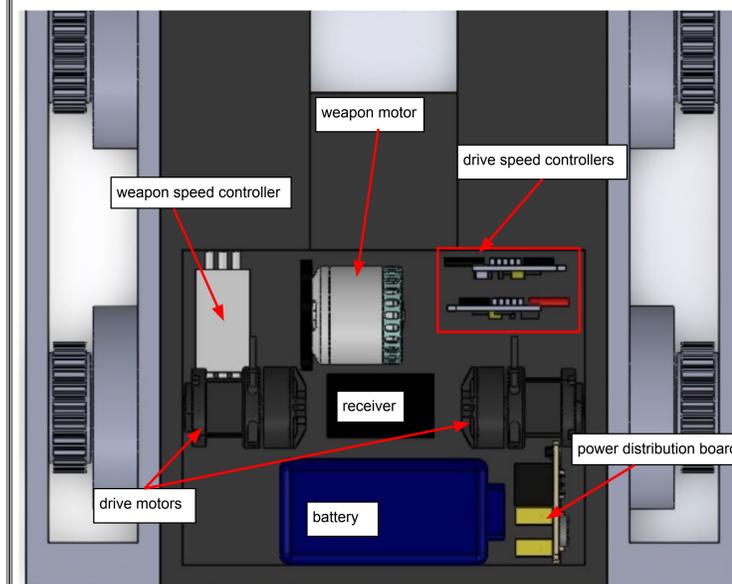


Figure 6. View of electronics layout