

# ALEX CARLSON

MECHANICAL ENGINEERING AT THE UNIVERSITY OF TEXAS AT AUSTIN



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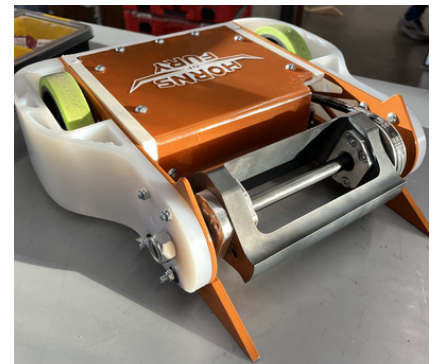
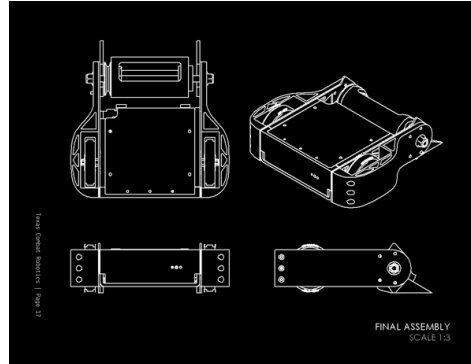
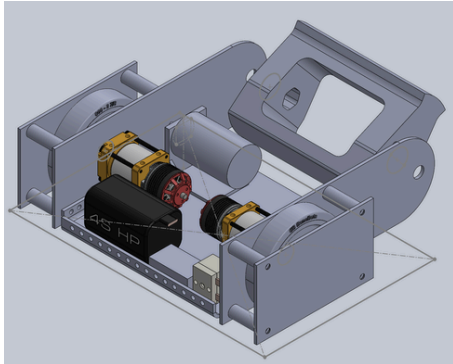


[alexcarlsonengineering.github.io](https://alexcarlsonengineering.github.io)



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## Mechanical Design Lead, Texas Combat Robotics



### What?

- Designed and manufactured a 15lb combat robot to compete at the first ever SXSW Battle Bots Metal Mayhem event
- Completed the design cycle on a tight **5 week timeline** from project inception to competition day

### How?

- Used **Solidworks** modeling and assembly management skills to create parts and integrate COTS components
- Utilized **DFM** and engineering fundamentals to create a robust and repairable robot
- Manufactured parts with **CNC** milling, sheet metal bending, and **3D printing**

### Results

- Battled tough competition to **place 2nd** in our group against experienced combat robotics teams
- Documented the design process in an engineering binder

### TIMELINE AND MANUFACTURING

#### Week 1

- Set guidelines and parameters
- Start design on CAD
- Find electronic and mechanical parts needed

#### Week 2

- Critical Design Review
- Work on assemblies on CAD
- Make BOM and order parts

#### Week 3

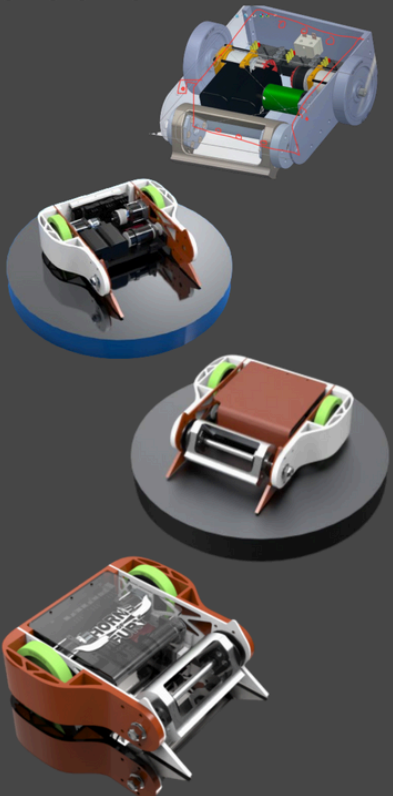
- Send custom parts to get fabricated
- Order all COTS parts
- Start testing electronics

#### Week 4

- Use test fits/prototypes for custom parts
- Work on iteration of robot and start driving

#### Week 5

- Put together final bot with all parts and fasteners
- Ensure all parts fit
- Practice driving and pack up for competition



Left: Engineering binder page documenting timeline  
Above: Texas Combat Robotics team photo after the competition