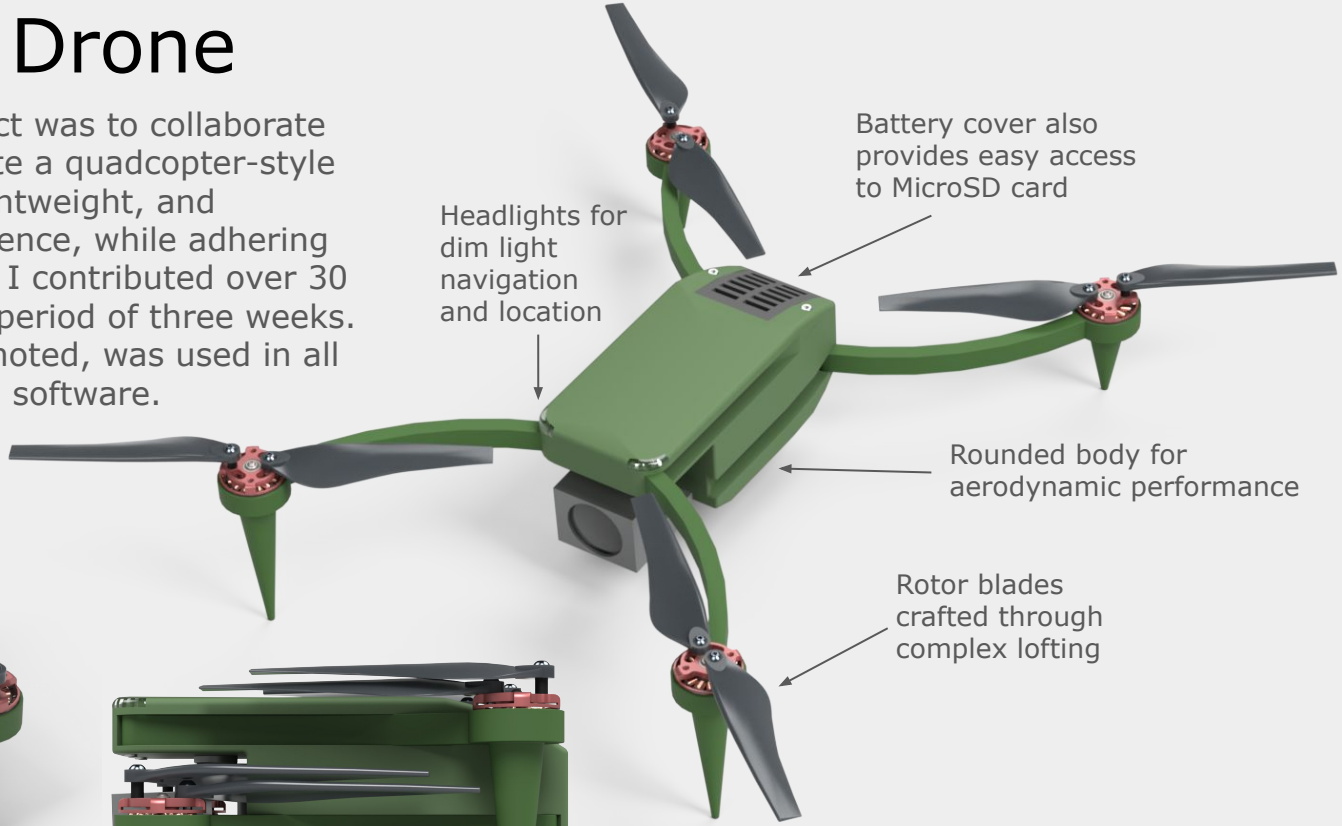
CAD Portfolio

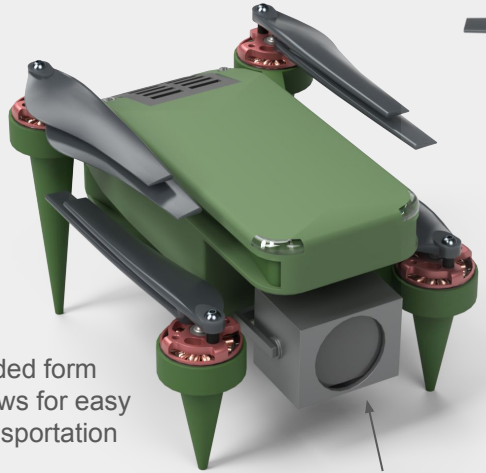
Nathanael Strickler

nstrickler@gmail.com

Quadcopter Drone

The goal of this group project was to collaborate with team members to create a quadcopter-style drone that was compact, lightweight, and appealing to our target audience, while adhering to certain design standards. I contributed over 30 hours to this project over a period of three weeks. Onshape, unless otherwise noted, was used in all projects as the primary CAD software.



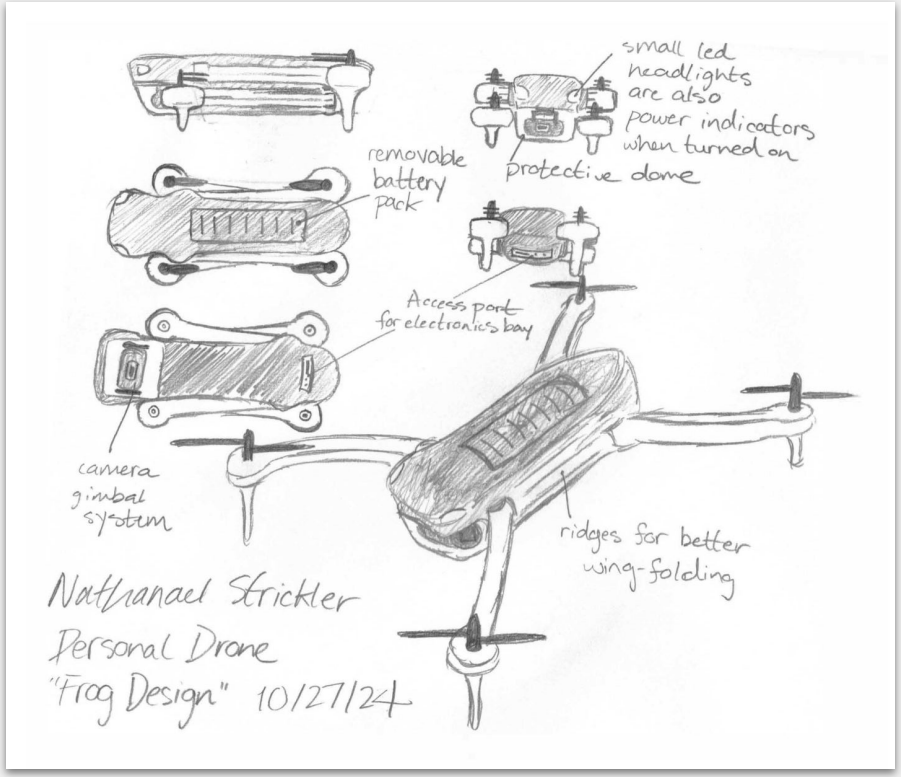


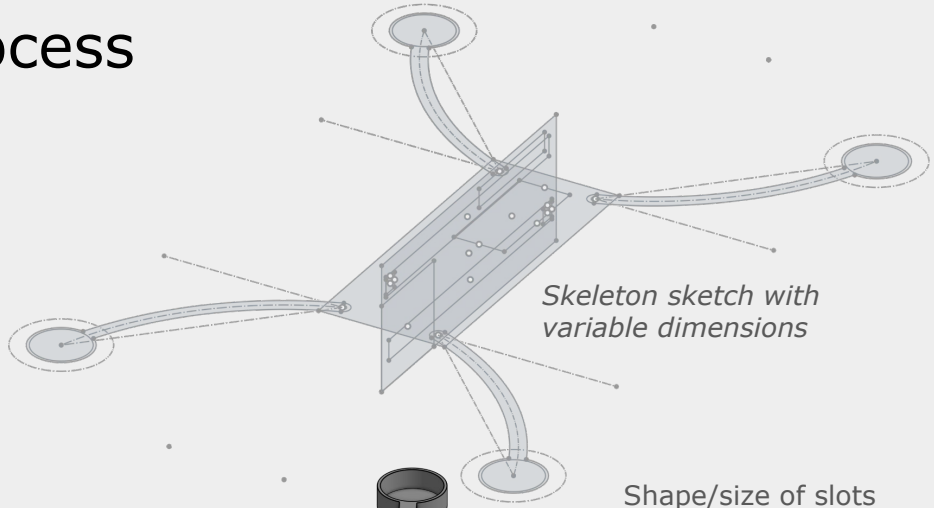
Primary assignments:
Body - Connor Stevens
Arms & Rotors - Nathanael Strickler
Camera system - Carter Freeman

Nathanael Strickler

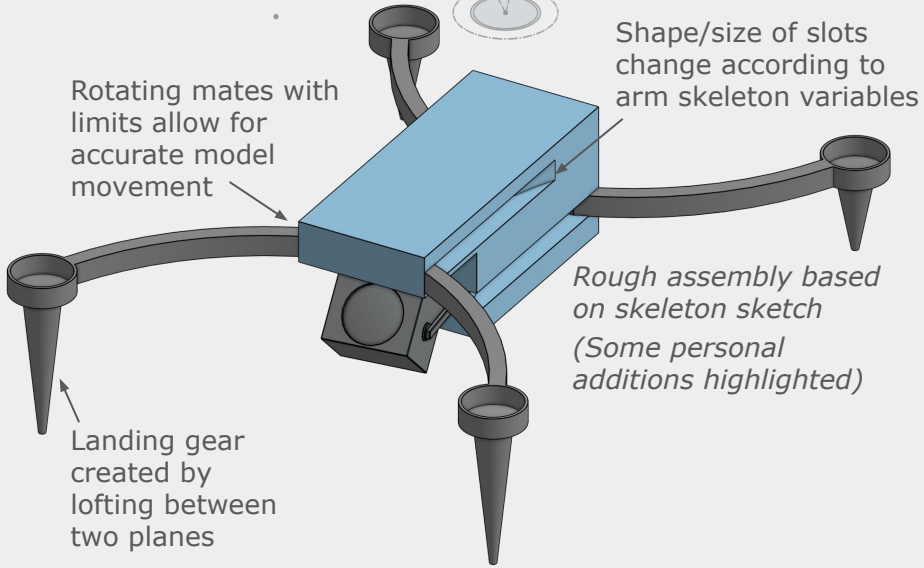
Quadcopter Drone - Design Process

Final concept design sketch (personally drawn after team input)





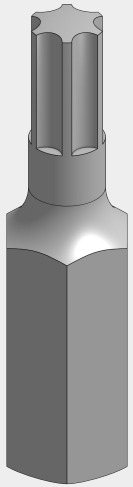
Skeleton sketch with variable dimensions



CAD Fluency Exam - Socket Wrench Screwdriver

Using detailed engineering drawings and with no prompting on process, I was able to created this screwdriver in a 3-hour period. It involved solid modelling 6 separate parts of varying complexity and assembling them in a realistic manner.

Revolves used in creation of solid parts with consistent features across a majority of their surface



Brand name added using decal function

Parts attached using fastener mates

Grip cross-section demonstrates use of circular patterns both inside and outside

Nathanael Strickler

Next-Gen Nerf N-Strike Jolt Blaster

This was a solo project in which I selected a mechanically simple product to innovate upon. To improve the Jolt blaster, a toy I was very fond of growing up, I perused online critique to add to my own opinions on areas of improvement. This project took 30 hours and multiple iterations to complete.

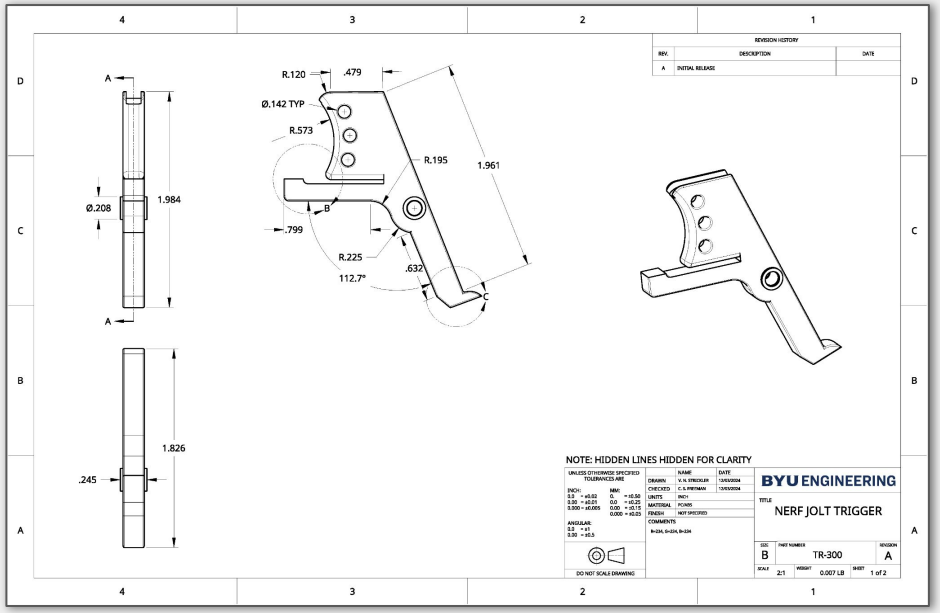
Key improvements include:

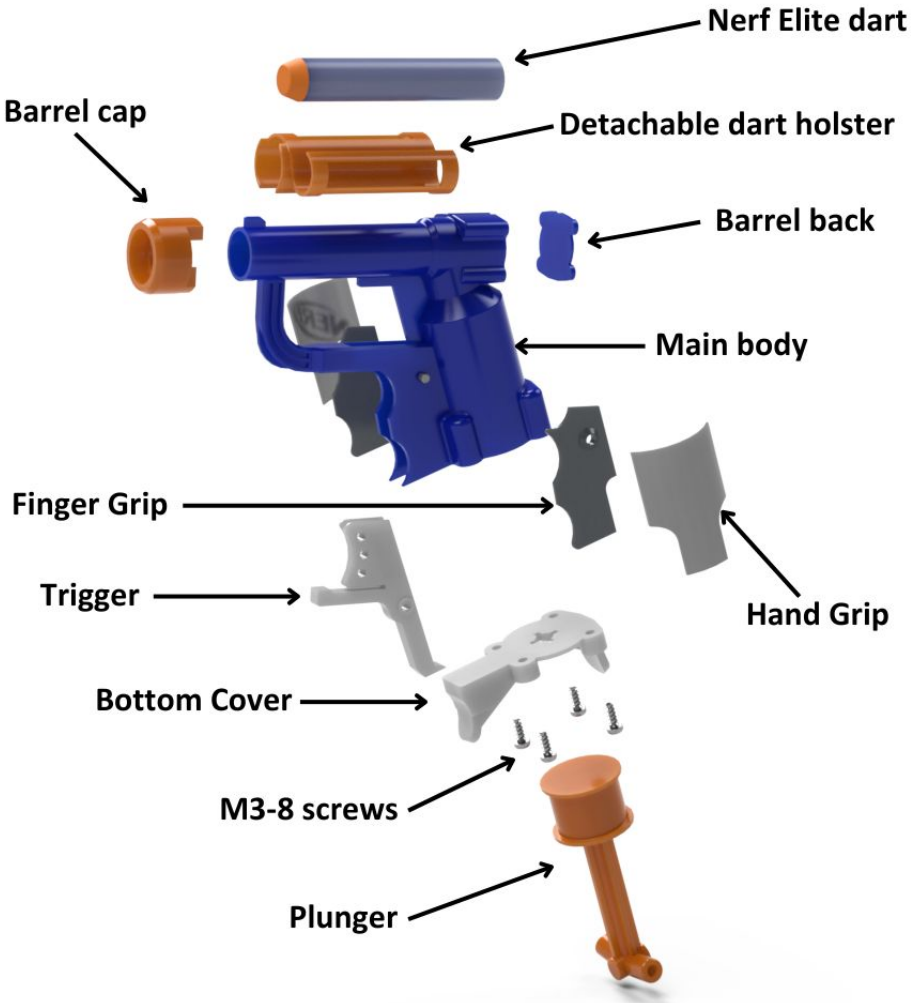
- Removable clip to store extra dart
- Larger grip spacing and expanded trigger housing to facilitate bigger hands
- Curved plunger handle for better purchase in wet environments

Nathanael Strickler

Jolt Blaster Parts Modelling

To create this blaster, 15 separate parts were modeled. Some, such as the main body, were very complex and required more time than others. Engineering drawings for parts were created according to ASME drawing standards.





Nathanael Strickler

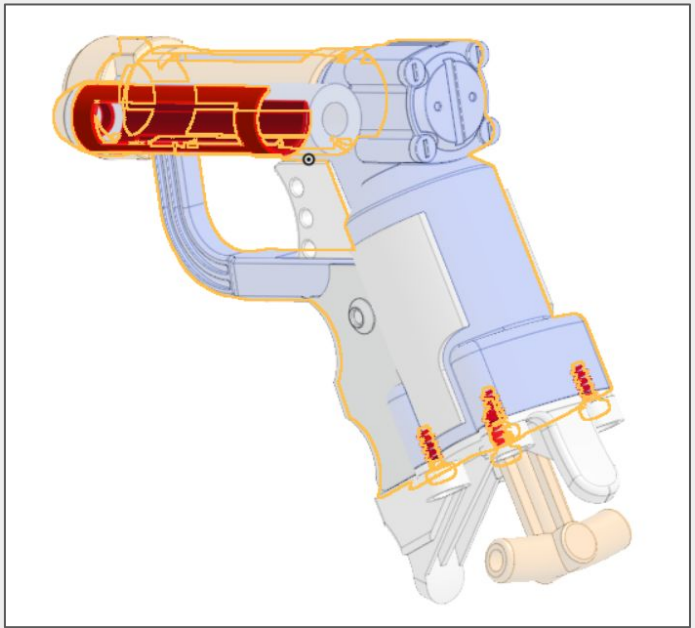
Jolt Blaster In-Depth Analysis

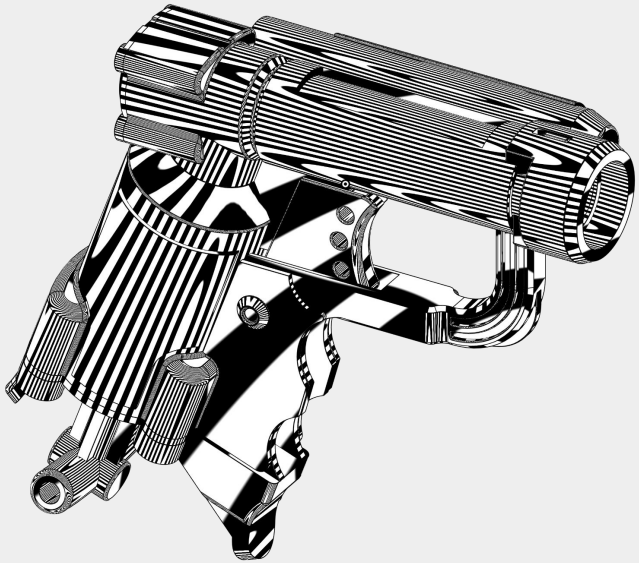
Multiple tests were run on the final assembly to assess market viability and ease of manufacturing.

Target weight was ≤0.23 lbs.
Volume and surface area convey sufficiently compact design.

Mass ☐ Override	0.14 lb
Volume	3.31 in³
Surface area	91.004 in²

Interference analysis shows intentional interference between dart and dart holster (tension holds dart in place) along with screws and main body. Additional interference between the plunger system and main body was detected, and both were re-dimensioned accordingly.





Zebra stripes show appealing contrast between the rounded body and flatter elements. They also demonstrate a lack of jagged edges which might prove dangerous to younger users.

Nathanael Strickler