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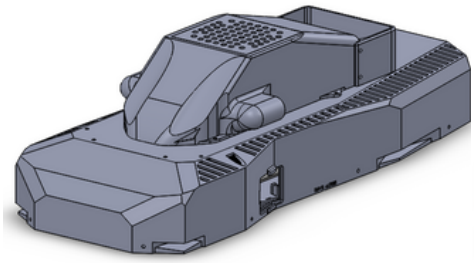
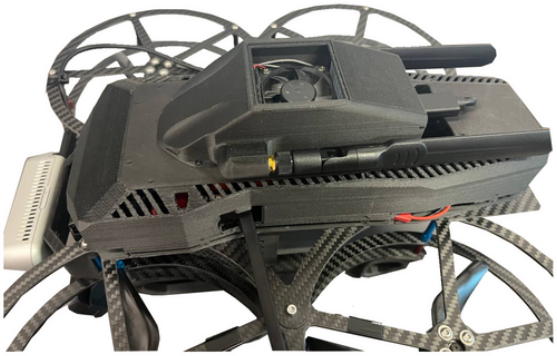
RAVEN DRONE BODY PROJECT - PERFORMANCE ROTORS (PR)





What?

- **Design** and **fabricate** the housing & mounts for new electrical components for a test drone
- **Design** antenna receiver mounts to **minimize intrusiveness**

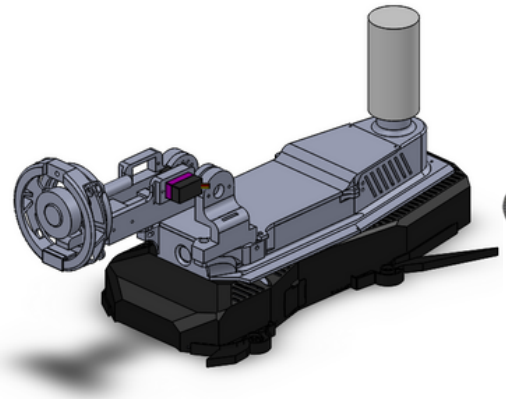
How?

- Used **SolidWorks** to design my parts
- Applied **DFM principles** for the housing design
- **3D Printed** all components

Results

- The design fulfilled its purpose well with a **minimal part count**
- Provided **compact** and **aesthetic** housing while allowing abundant **airflow for fan & heatsink**

NDT RAVEN DRONE BODY PROJECT - PR



What?

- **Design** and **fabricate** a compact housing for NDT components
- Ensure housing accomodates **easy removal and refilling** of couplant bottle

How?

- Used **Solidworks** to design my parts
- Applied **DFM principles** for housing design
- **3D Printed** all components

Results

- New design **reduced manufacturing & assembly time by 45%** with its **minimal part count**

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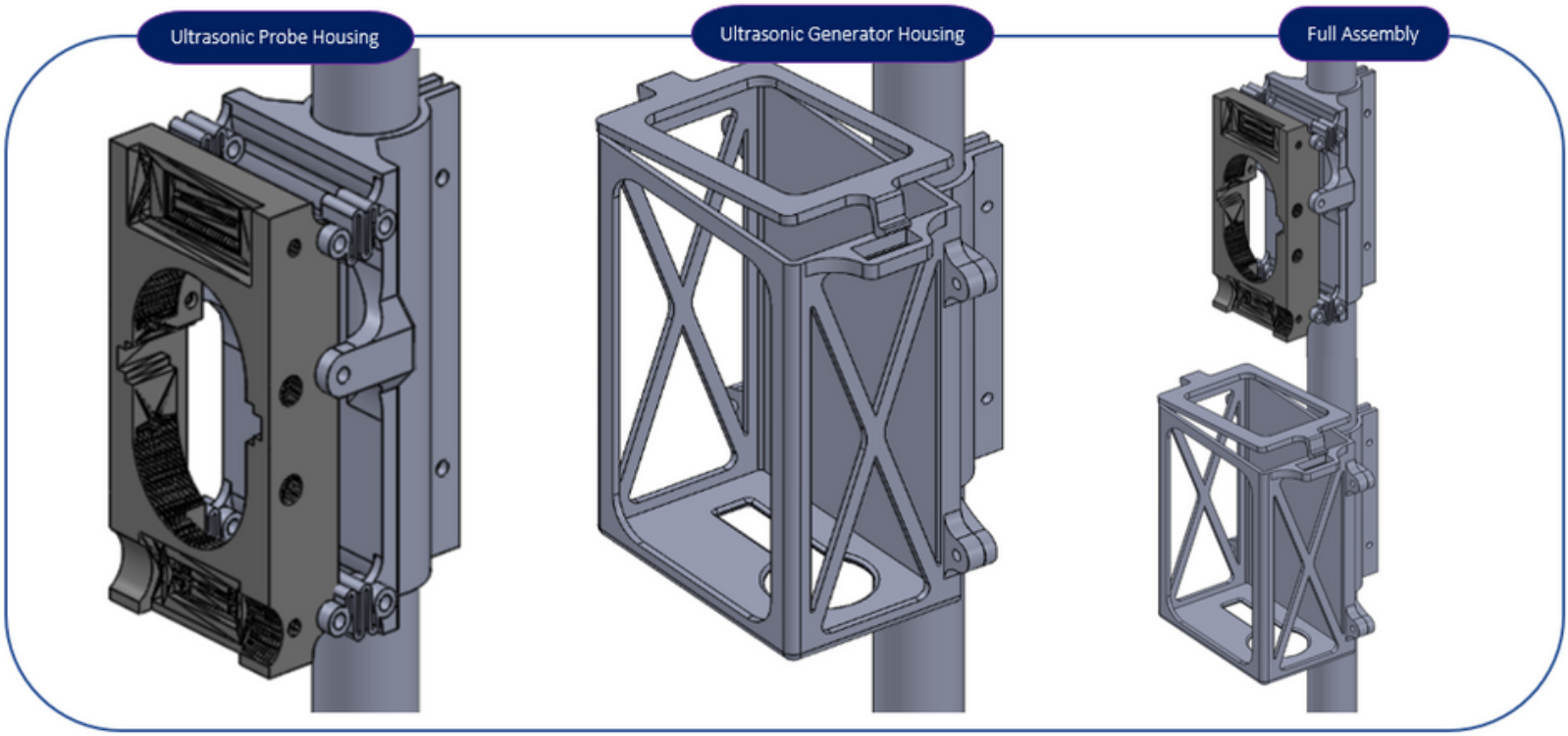
ULTRASONIC TESTING PROBE MOUNTS - PR



What?

- **Design** and **fabricate** the housing and mounting clamps for Ultrasonic Testing (UT) equipment
- Design a **compliant spring mechanism** to allow for limited rotation of UT Probe head

How?

- Used **SolidWorks** to design fixture
- **Prototyping** of various spring designs to achieve target flexure
- Prototyping & **extensive testing** of **snap fit lock** and **friction clamps**

Results

- The UT set has been **successfully deployed** for On-Site NDT **operations**, with **good reviews** from the operations team

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DRONE POWDER RELEASE MECHANISM & MOUNT - PR

What?

- **Design, Fabricate & Test** a **powder dispensing mechanism** which mounts onto a powder payload
- **Minimize** number of **electrical components** required
- Ensure payload and dispensing mechanism can be **quick-released**

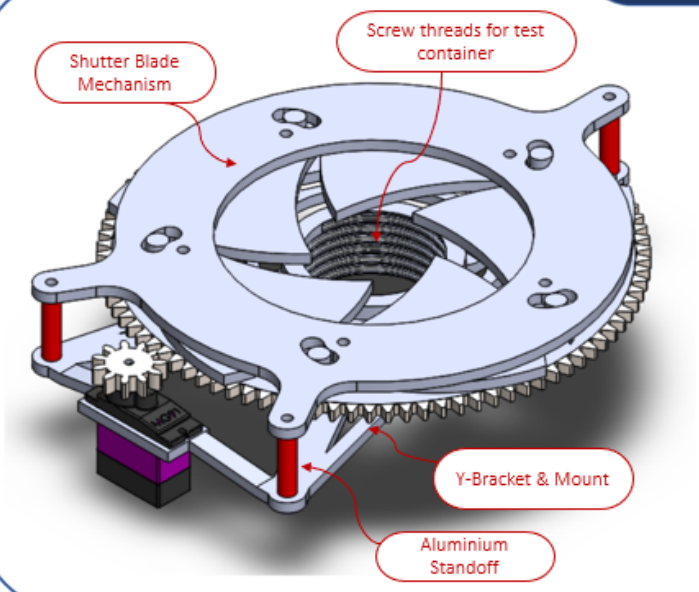
How?

- Produced **3D CAD** models with **Solidworks**
- Used **Solidworks Gear Toolkit** to design gear system
- **3D Printed** all components

Results

- The design fulfilled its task well while **minimizing weight** and **part count**
- Design will be further iterated and **presented to the private client for sale**

First Iteration



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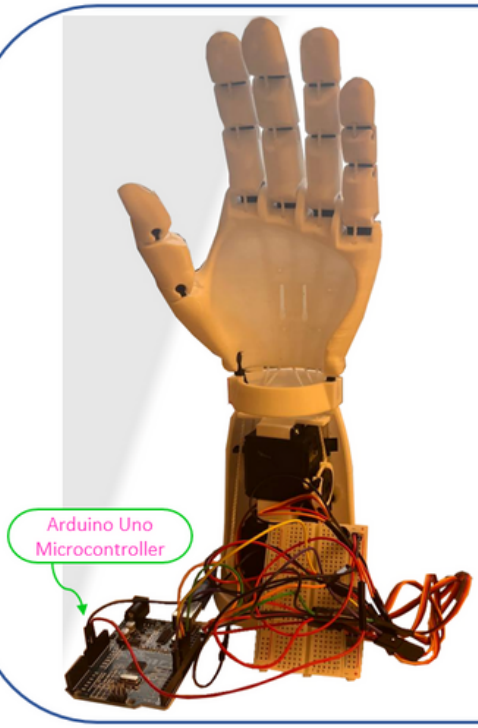
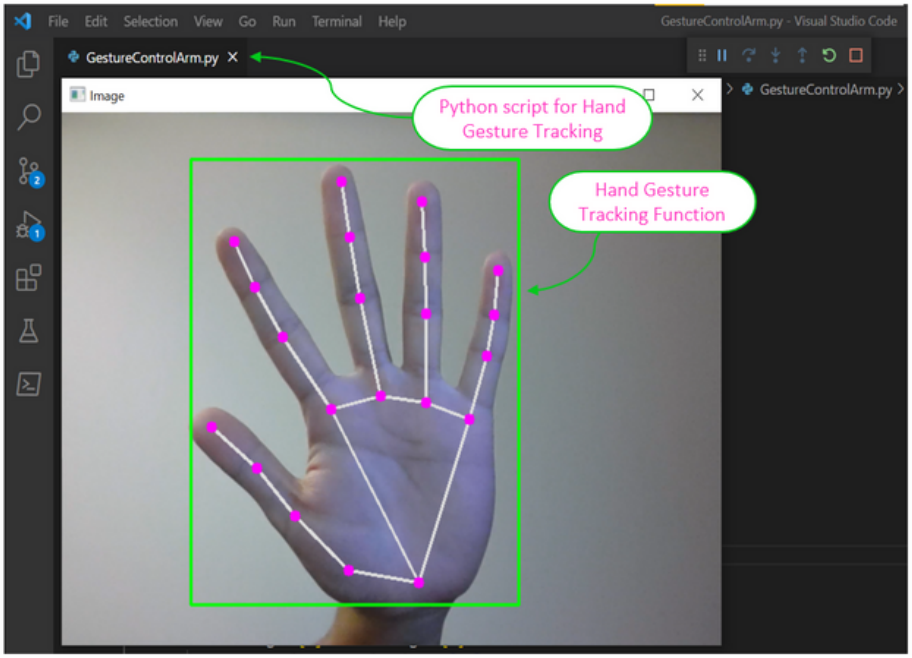
3D-PRINTED GESTURE TRACKING ROBOT HAND





What?

- **Design, Fabricate & Assemble** a 3D-Printed Robot Hand
- Implement **hand gesture tracking** ability via **computer vision**

How?

- **Improved** upon open source 3D Robot Hand design to **fix wrist joint design issues**
- Used **Arduino Uno** for robot finger controls
- Implemented **CV2 & CVZone python packages** for computer vision capability

Results

- Robot Hand can track and mimic user hand gesture **successfully and quickly (scale of 0.1 seconds)**