Dylan Shackelford

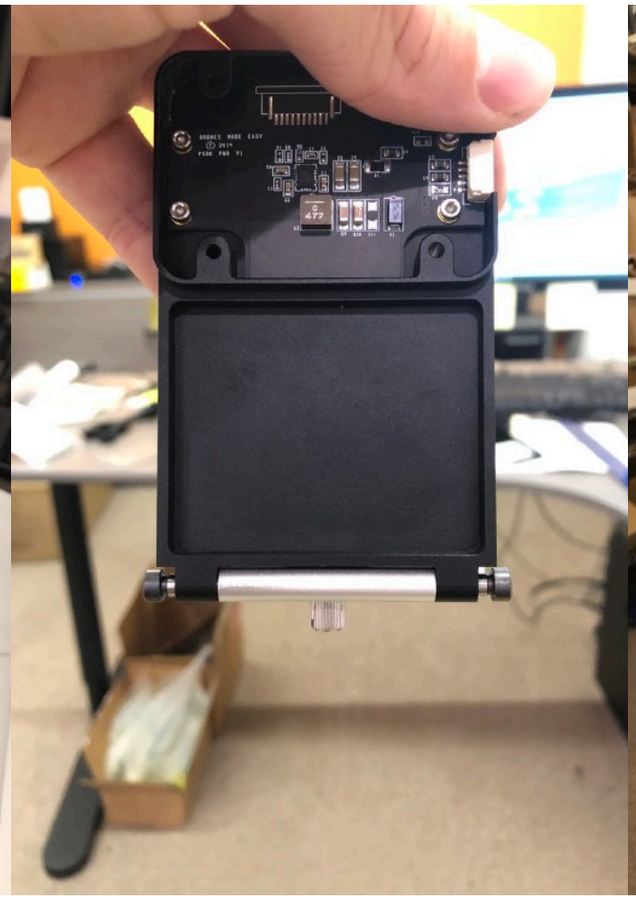
Mechanical Design / Software Development

University of California, Santa Barbara, BSME 2017

Bracket: Sony MSZ-2100G

Matrice 200

- Worked with Sony to develop brackets to mount their Multispectral bundle (camera and sensor)
- *Design Constraints:* (1)rotate sky port connector 90deg, (2)don't obstruct FPV camera, (3)sensor needs to be above the shadow of the drone.
- Utilized a hinged, aluminum design.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Matrice 200

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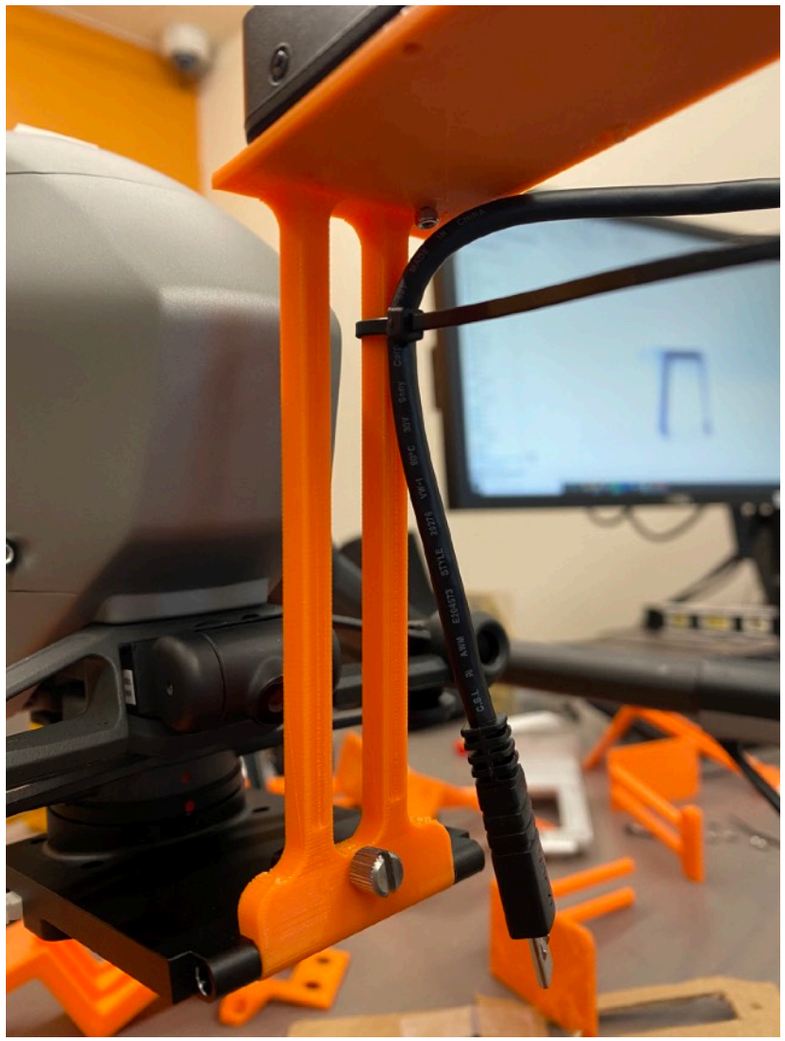
Inspire 200

- Adapted model from Matrice 200 to the Inspire 2
- Cut out view for FPV camera
- Considerable weight saving employed after Matrice 200 feedback.



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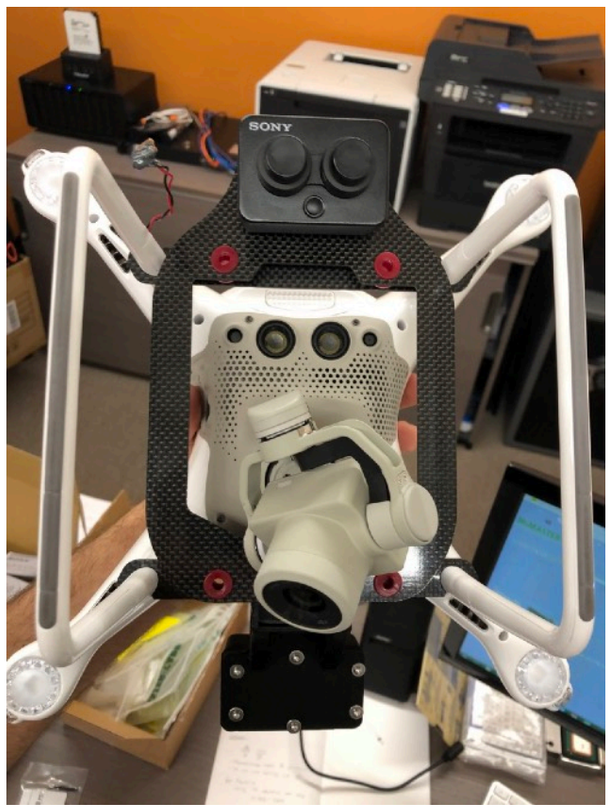
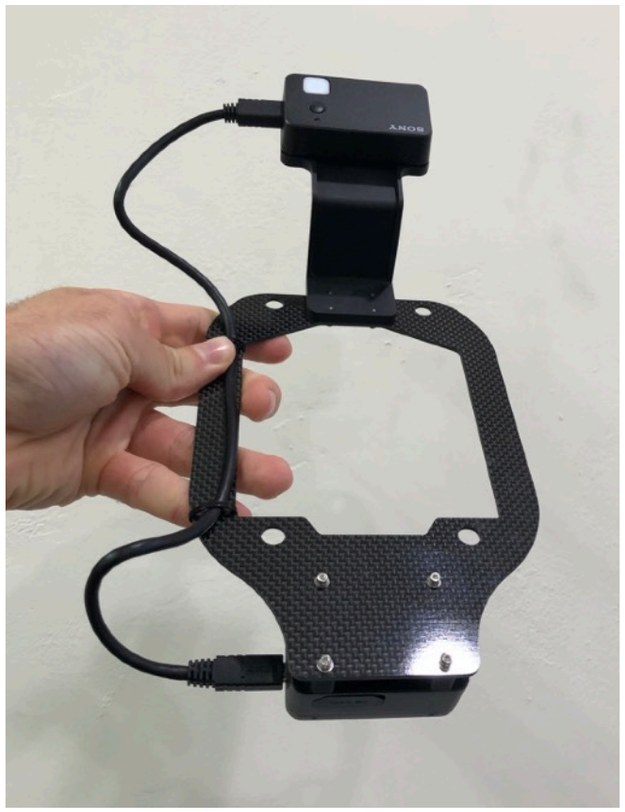
Phantom 4 Pro

- Carbon Fiber and Aluminum
- *Design constraint*: IMU and Light sensor needed to be rigidly attached, while being on opposite sides of the drone, mounted onto a plastic drone shell.
- Damper balls included since multispectral bundle wasn't on a gimbal.





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Phantom 4 Pro

- Market release with Sony Ag team.
- Calibration plate design for repeatable assembly.

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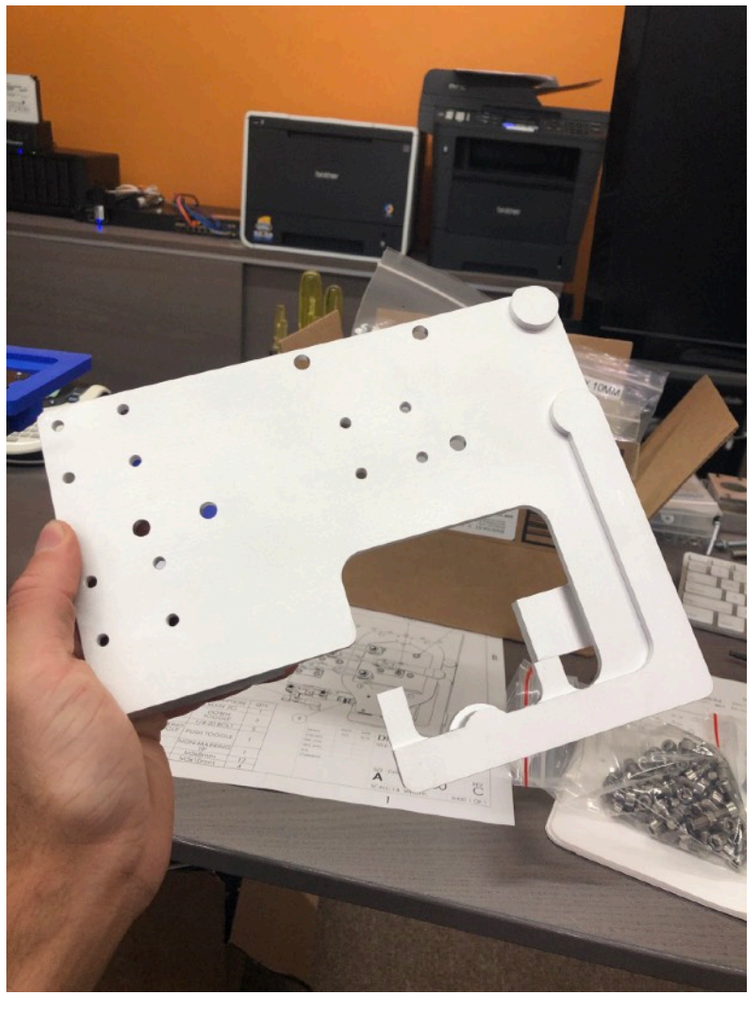
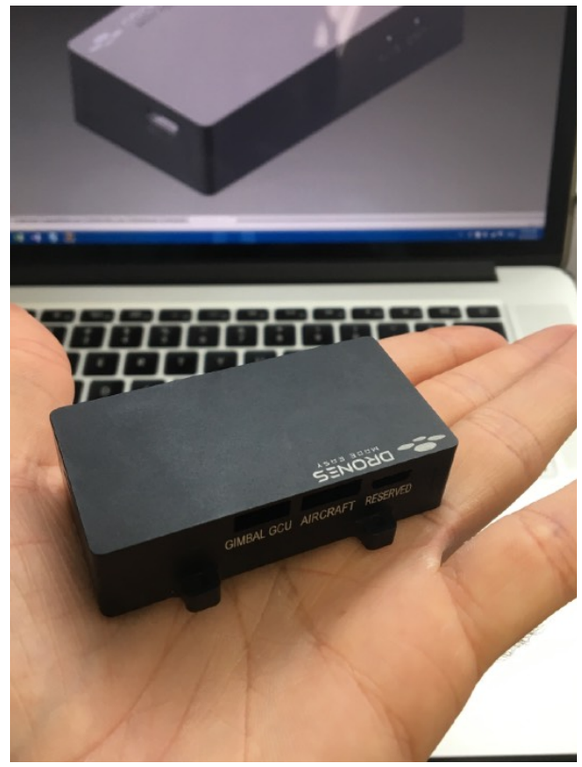
Phantom 4 Pro - Calibration Plate

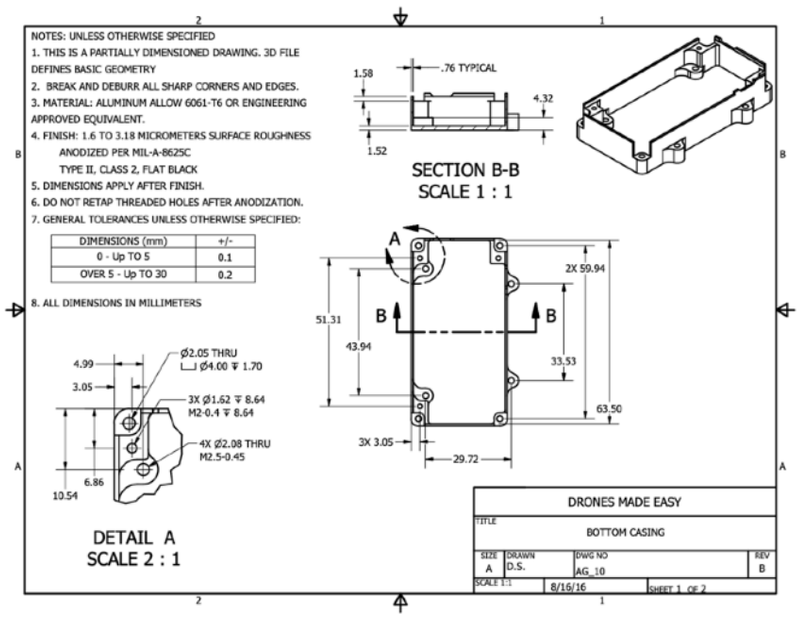
- Jig to help ensure assembly as consistent as possible.



Ninja On-Board-Computer Enclosure

- Enclosure for custom On Board Computer (OBC)
- OBC communicates with Map Pilot to trigger third party cameras on mapping rigs.
- Manufactured in aluminum





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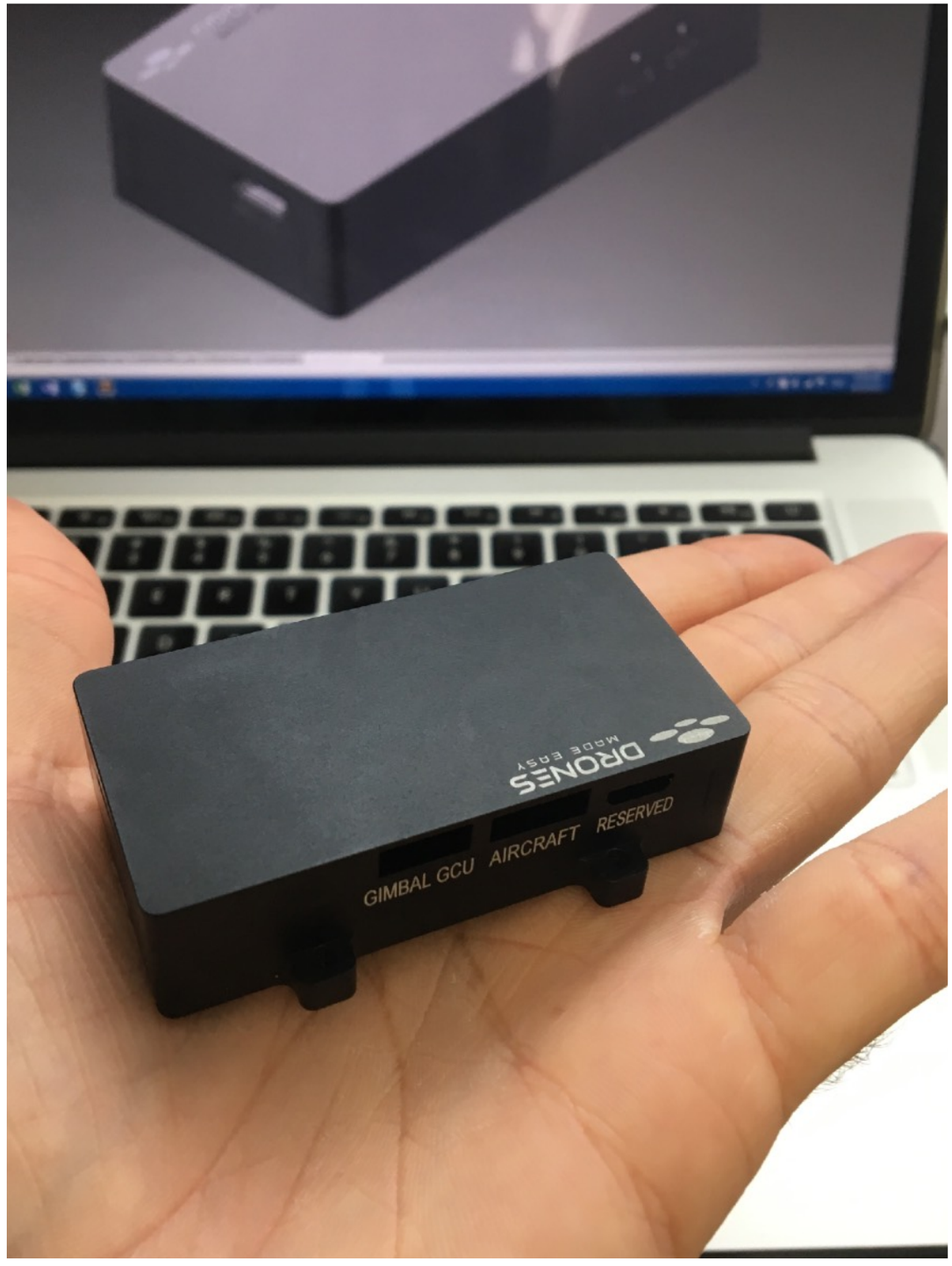


Armadillo - The Camper Canopy

- Designed in FreeCAD
- 8020 aluminum Rails for easy attachments
- Custom Corner bracket design and produced with CNC
- Geometry solutions solved using Octave for the Linkage assembly.
- Camped and surfed all over California with it

Armadillo - The Camper Canopy

NOAA Mobile Radar Station

- Senior Capstone project
- Remotely powered with solar panels and battery bank
- Tracking poachers via Radar and autonomous software.
- Systems Lead: integrating mechanical housing, electronics and software

NOAA Mobile Radar Station

Swish N’ Stash

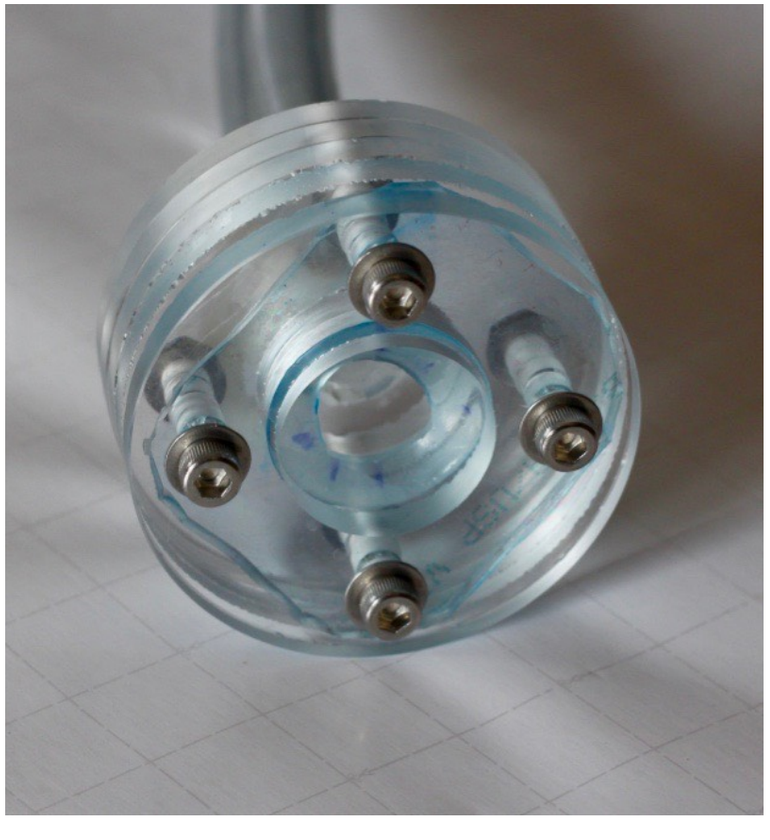
Water Powered, Portable, Storable Dishwasher

- ME 153 Design Project
- Won “Most Technical” at Design Fair.
- 3 Months with a budget of 150$
- Powered by the average faucet water pressure!

Swish N’ Stash Continued

Materials:

- Housing made with MDF Plywood
- Rotor Shaft machined from
  Stainless Steel 304
- Faucet Attachment with flexible
  rubber membrane
- 3D Printed Rotor
- Rubber Seals added to Rotor and Walls
- Piping with PVC and Rubber Tubing



Compressed Air Motor

- Used Lathe, Mill, Drill Press,Band Saw, Sanding
- Ran at 2300 rpm
- Materials: Stainless Steel, Brass, Plastic, & Aluminum