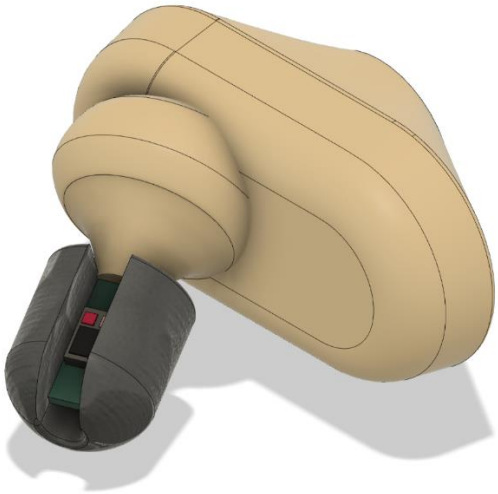
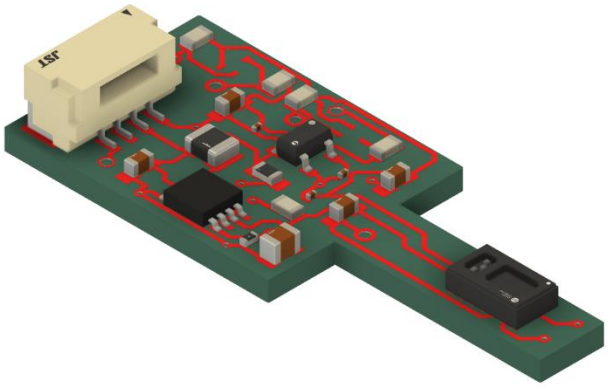
3D Portfolio Jason Rinehart



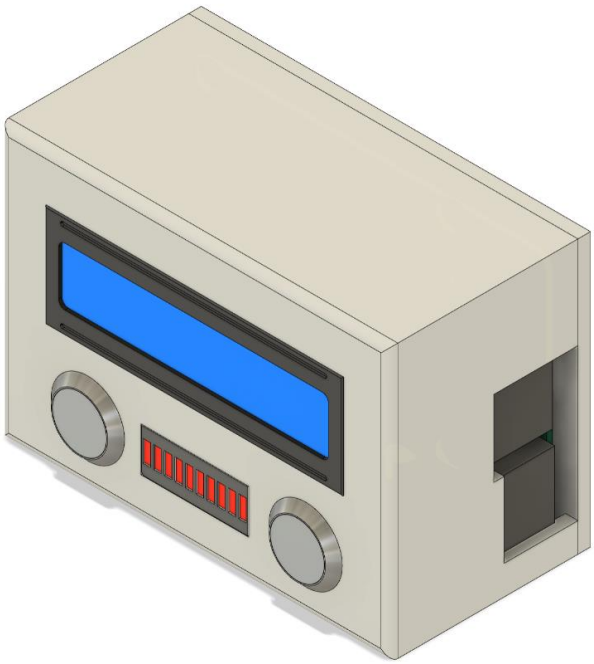
wearable earbud-style pulse oximeter concept. Plastic shell encloses perpendicular PCBs. Foam ear tip mounts to the PCB and has a cutout for LEDs to shine through, and photodetector to see through. The design is inspired by Sony WF-1000XM3 earbuds.

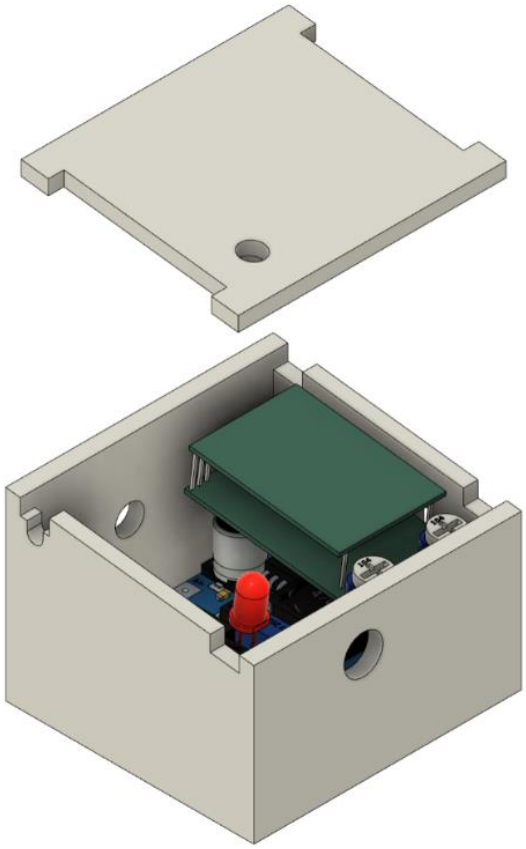


custom printed circuit board (PCB) designed for in-ear pulse oximetry. This is an exported 3D model from Altium Designer. Components, including photoplethsmogram chip (bottom right) and connector (top left) were downloaded from Ultra Librarian. This model serves as a visualization of the PCB.

home security control panel

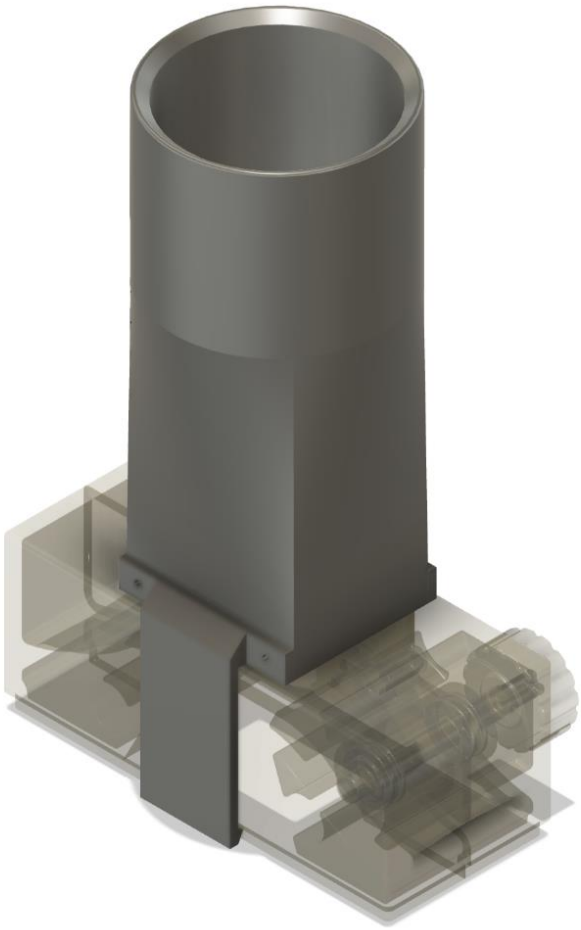
featuring a Raspberry Pi 3B+, LCD display, two push buttons, LED matrix, and two-position switch (not visible). The plastic enclosure holds the system together and may be mounted to a wall with command strips. Works together with the outdoor motion sensor circuit outlined below.



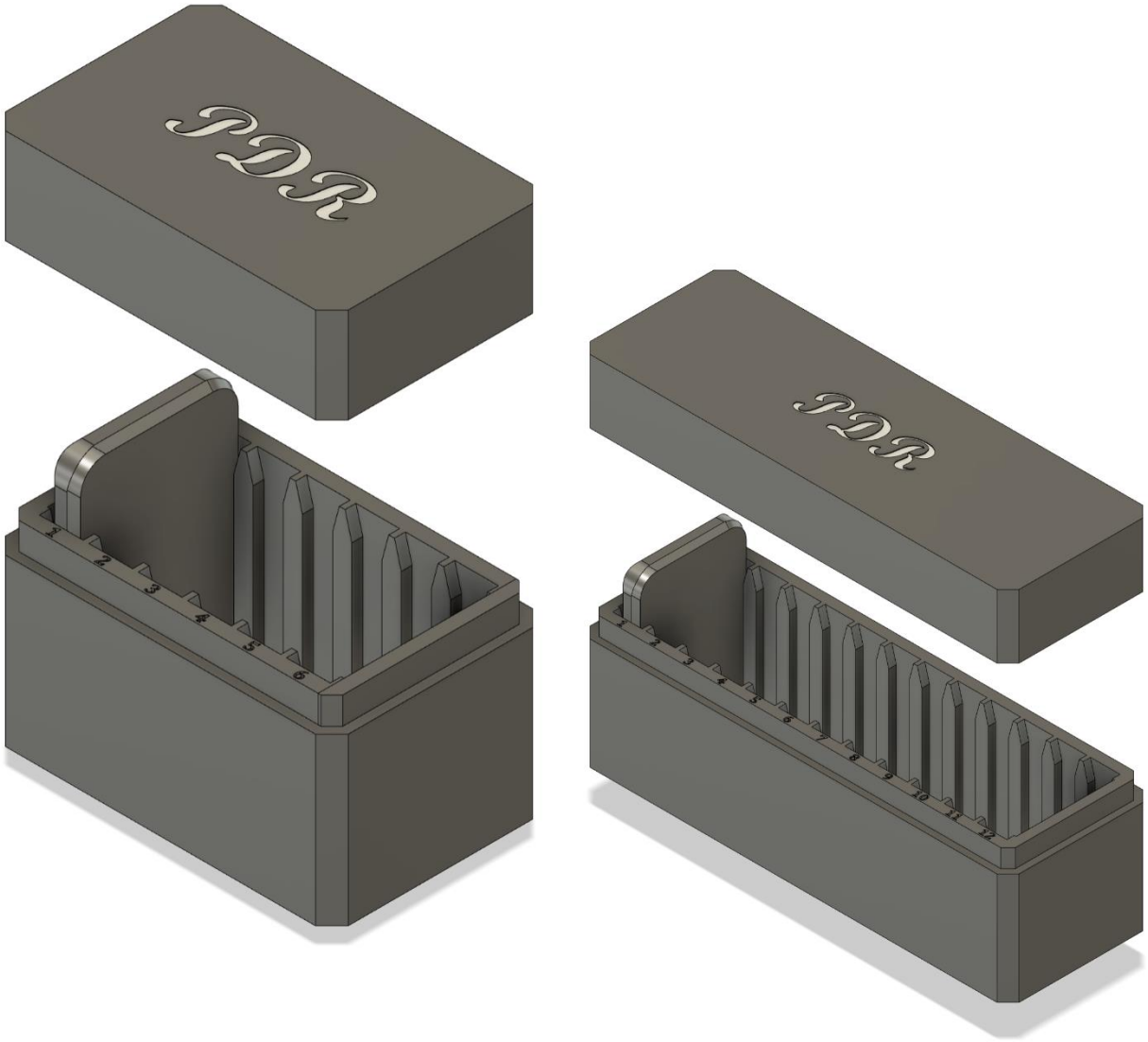


outdoor motion sensor circuit

using a 5.8GHz radar sensor. Also included in the enclosure is two DC-DC buck converters for power and a Particle Photon microcontroller for running detection code and connectivity via WiFi.



35mm film scanning lens adapter to interface an existing film carrier (translucent) to a Nikon AF Micro Nikkor 105mm 1:2.8 D lens for digital scanning. The height of the tube determined whether the image was in focus. It was calculated by finding the focal distance specification of the lens, measuring the distance from the glass to the end of the lens body, and by measuring the distance the film is recessed in the film carrier.



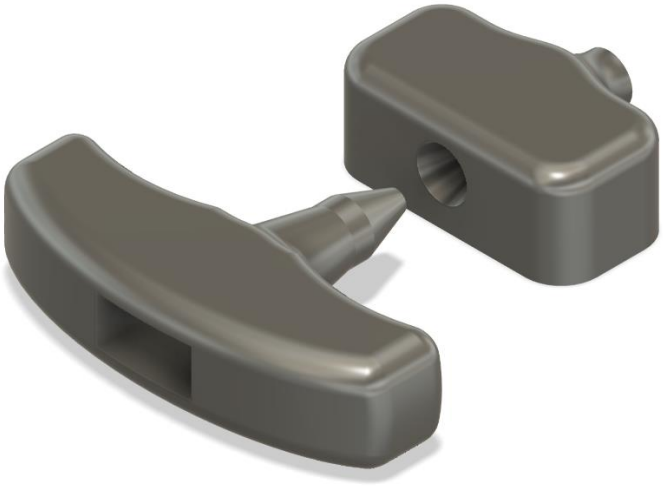
antique coin storage box modeled to fit six or twelve Numismatic Guarantee Corporation (NGC) “slabs”, each containing a graded wcoin. Initials “PDR” have been etched into the lid and bottom of the case, and are the initials of my father, Phillip Douglas Rinehart. A lid smoothly fits overtop the case for storage, and each slot has been numbered for ease of use.

storage brace to hold together the arms of an electric scooter while folded.

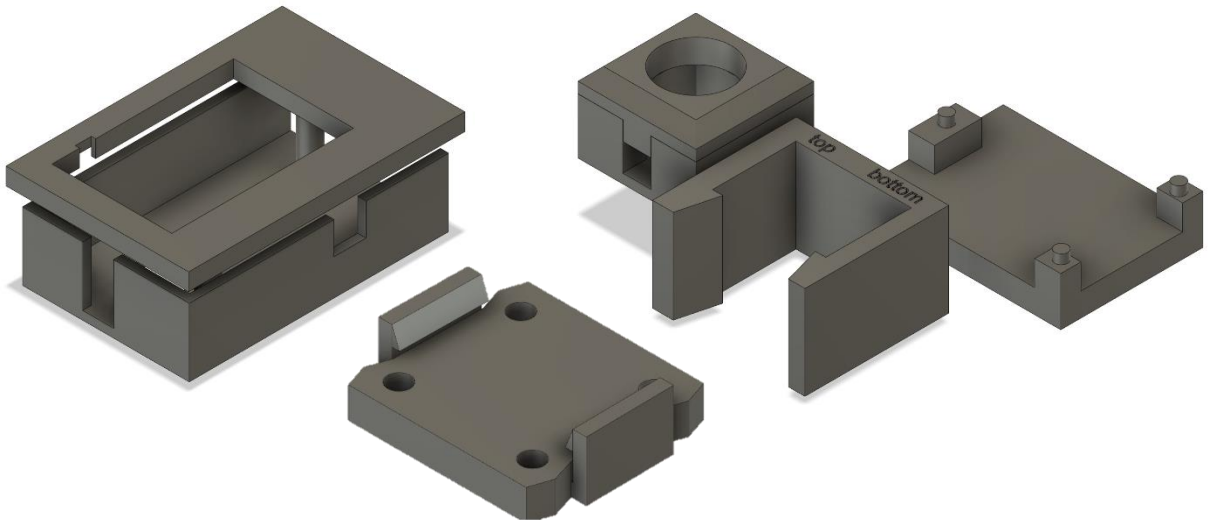
flexible bookmark with a Tesla logo visible on the exterior of the book.

turntable lid brace fits the lid of a Technics SL5200 Direct Drive turntable and mounts to the existing hinge point, extending the useful life of the turntable. The acrylic lids of vinyl turntables often break at the hinge tab due to frequent use.

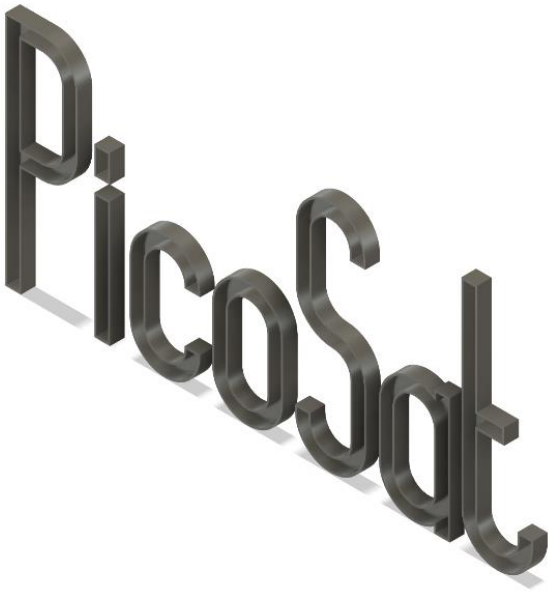
airplane trim piece designed for the Piper Cherokee 180 single-engine aircraft. Mounted overtop a metal floorboard beam, this component needs to withstand the force of being stepped on repeatedly. Its dimensions were measured from an original, broken component.



manual car trunk release revitalizes a car with a broken trunk release, where the end fitting breaks off the steel cable. While many new cars are equipped with electronic trunk releases, there are still a considerable number of cars on the road with a manual latch to release the trunk. This new car trunk release allows the driver to fix this problem while also repositioning the trunk release to an ergonomic area for them.

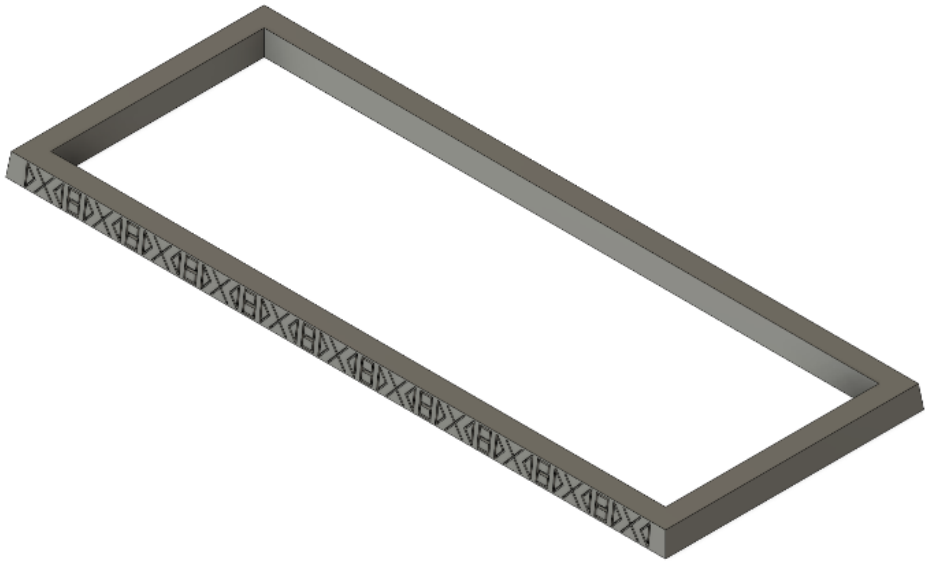


drone component mounts for video transmitter, landing gear, first-person view camera, and flight data telemetry radio.

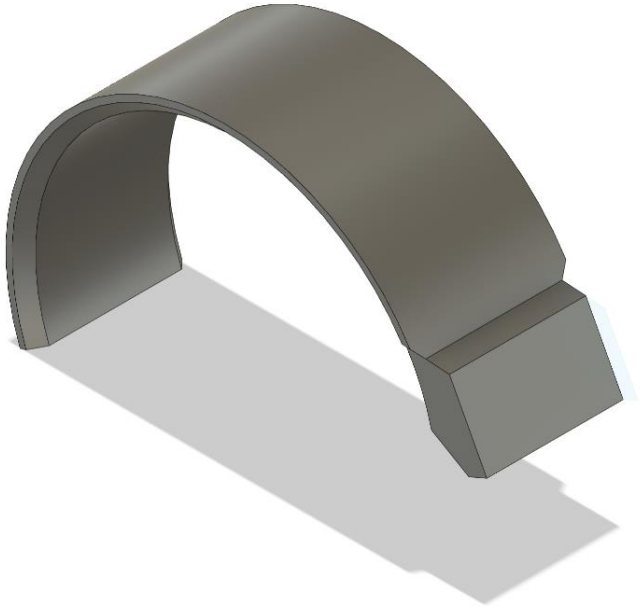


plastic LED diffuser shaped in the letters “PicoSat” to put on display the efforts of a group of sixteen talented students working to launch a picosatellite into space at Wentworth Institute of Technology. The plastic used for 3D printing must withstand internal temperature rises due to the LEDs.

water bottle on the desk of a classmate curious to learn 3D modeling. Thus, their tool for staying hydrated now doubled as a subject for a 3D design.



sofa connector bracket to connect two sectional pieces, and decorative pattern etched on one side.



rear tire fender for the Fluid Freeride Horizon electric scooter.