Details on Parts and Materials for the Pan/Tilt Motion System
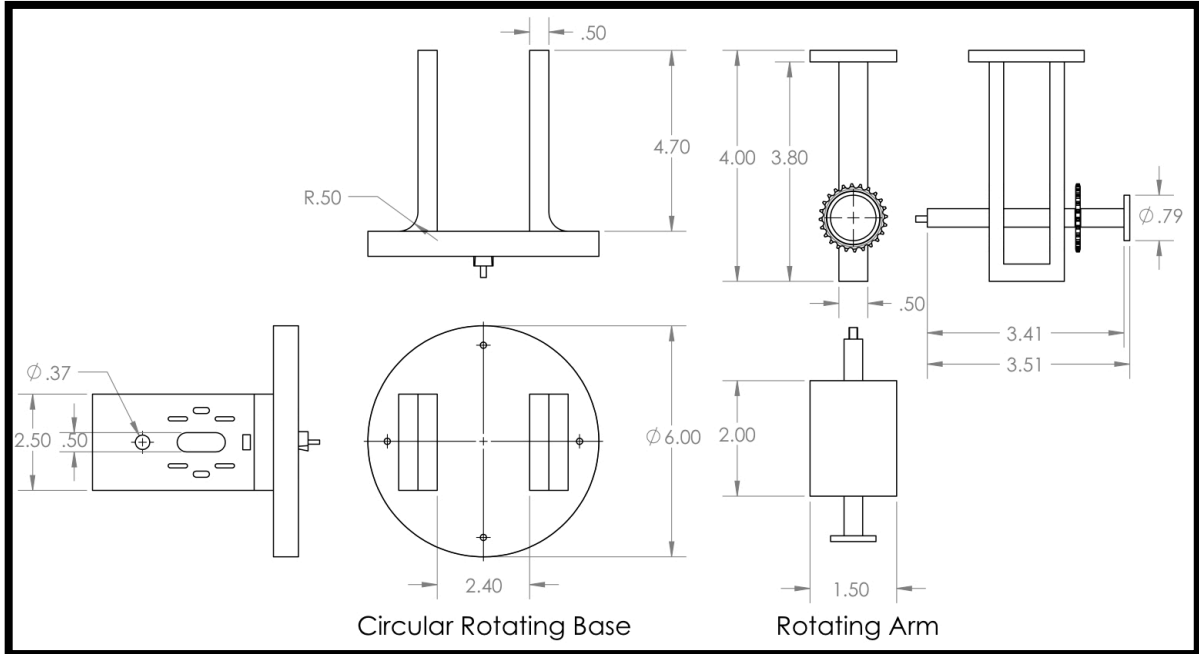
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Summary

Figure 1. Mechanical drawing of the collector components. All measurements are in inches.

The electronic components of the collector includes an Arduino Uno microcontroller with the Adafruit motor peripheral. The Adafruit peripheral comes with the connectors to interface with a standard servo motor by Hitec that is used to rotate the base. A pulley system translates the rotational motion from the servo motor to the rotating base of the collector. The energy collector module attached to the collector arm generates a voltage, which is connected to one of the analog inputs of the Arduino board which is used for feedback. The wiring of the collectors to the microcontroller is through the center of the rotating base to avoid wire entangling.

Table 1. Bill of Materials

Part	Supplier	Estimated Price
ABS Plus Rapid Prototype Material	Machine Shop	$150
Arduino Uno with Atmega328	Adafruit.com	$30.00
Adafruit Motor/Stepper/Servo Shield for Arduino	Adafruit.com	$19.50
Small 6V 1W Solar Panel	Adafruit.com	$10.00
Wind Power 2.0 by THAMES & KOSMOS	Horizonhobby.com	$35.93
Stepper Motor – 200 steps/rev, 12V 350mA	Adafruit.com	$14.00
Futaba S148 Continuous servo motor	Adafruit.com	$10.00
Pulley Chain for Sprocket Set	Vexrobotics.com	$14.95
TOTAL		$284.38