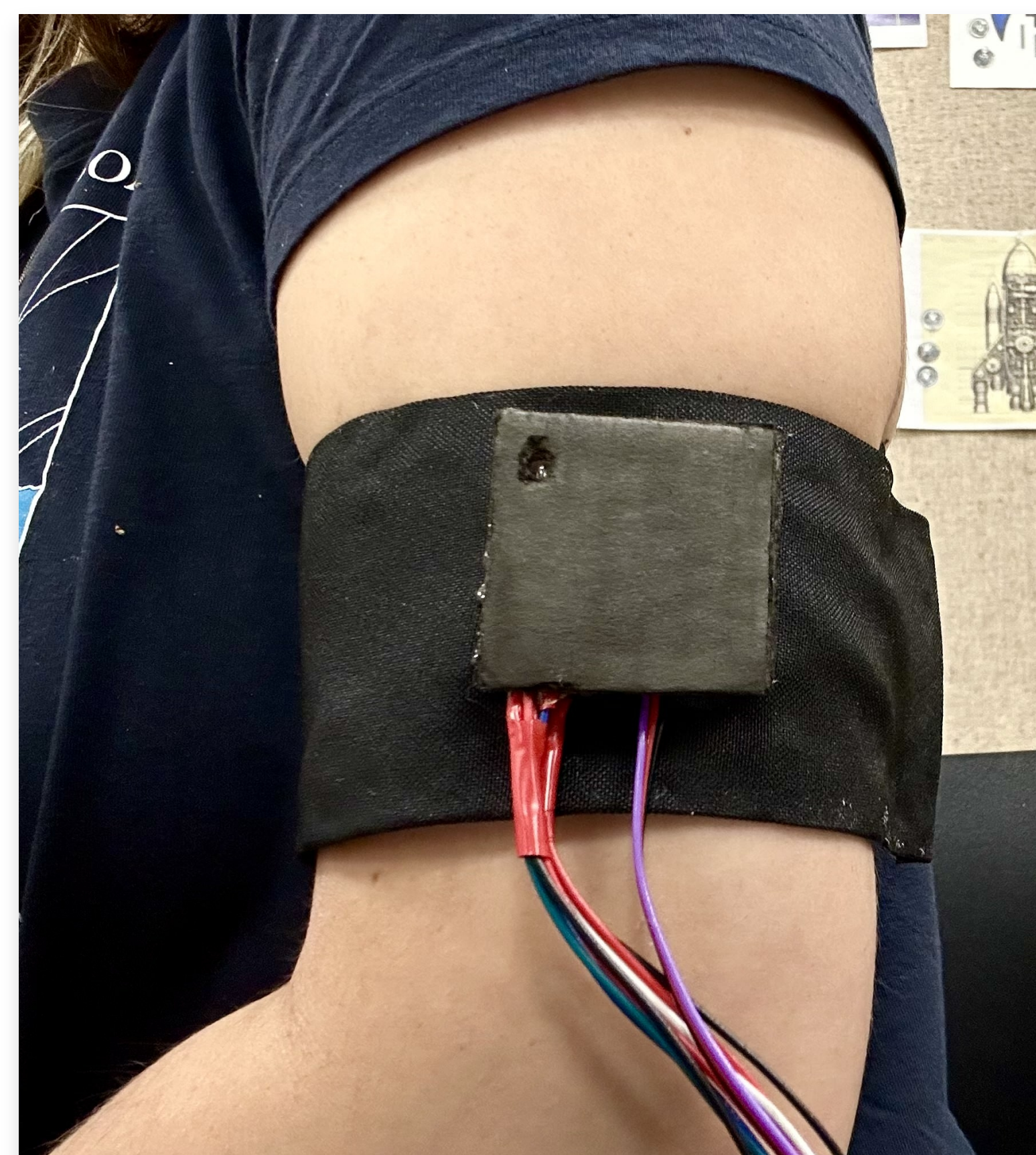


## DEVICE DESCRIPTION

The VITALink is a wireless armband for monitoring the vitals of discharged elderly patients. The device is meant to be sleek, light, and available in colors such as black, gray, dark green, or magenta in an effort to be unnoticed by users wearing the device. It is a headless device with an LED to indicate battery status to the user. The user's vitals can be accessed through an accompanying app by both the user and their provider. This device is HIPAA compliant, requiring the user to complete a consent waiver in order for the provider to access the user's data. The data is encrypted and password protected as well.



## USERS

This device has two users: the patient, and the healthcare provider. The patient actually wears the device, while the healthcare provider monitors the vitals collected by the device. The data collected by the device is as follows:

- Current Heart Rate
- Average Heart Rate
- Current Activity Level
- Average Activity Level
- Current Body Temperature
- Average Body Temperature
- Blood Oxygen Percentage
- Breath Rate
- Average Breath Rate

The VITALink is intended to decrease the mental load of nurses and hospital staff by eliminating the need for extensive hospital stays due to necessary vitals monitoring. The device also affords more effective geriatric care, as accurate vital signs monitoring is imperative in short-term elder care.

## MATERIALS and BOM

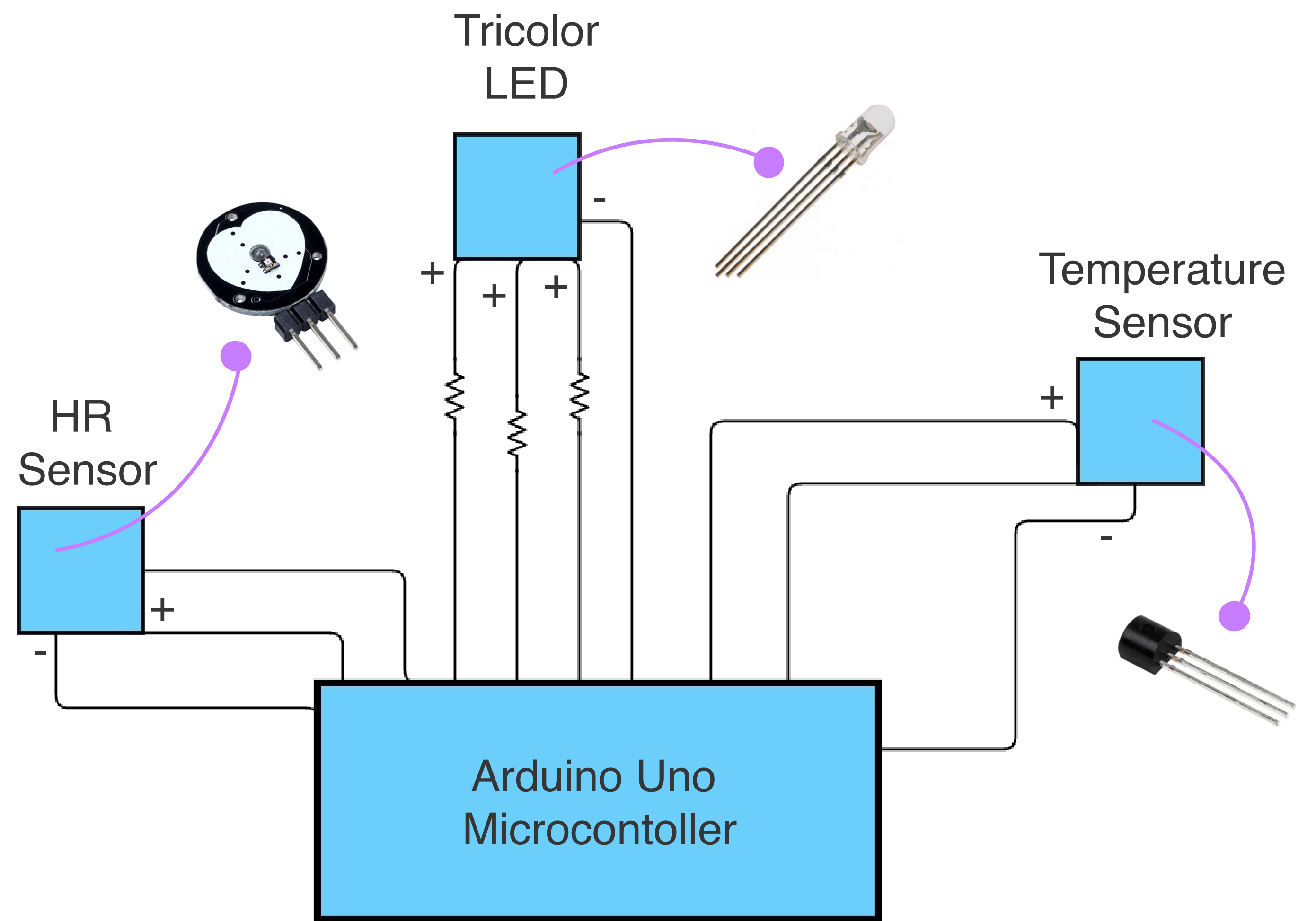
Elastic Band.....	\$5.00	<small>(<a href="https://www.seattlefabrics.com/3-Heavy-Weight-Elastic-500-yard_p_265.html">https://www.seattlefabrics.com/3-Heavy-Weight-Elastic-500-yard_p_265.html</a>)</small>
Velcro.....	\$3.28	<small>(<a href="https://www.walmart.com/ip/VELCRO-Brand-Industrial-Fasteners-Stick-On-Adhesive-4in-x-2in-2-pack-0-417lbs-90200/19311525?wl13=2888&amp;selectedSellerId=0&amp;wmlspartner=wlp">https://www.walmart.com/ip/VELCRO-Brand-Industrial-Fasteners-Stick-On-Adhesive-4in-x-2in-2-pack-0-417lbs-90200/19311525?wl13=2888&amp;selectedSellerId=0&amp;wmlspartner=wlp</a>)</small>
Titanium Casing.....	\$9.00	<small>(<a href="https://ti-alloys.com/product/rison-titanium-sheets-plates-commercial-pure-grade-2-0-5mm-0-6mm-0-8mm-1mm-1-5mm-2mm-3mm-4mm-6mm-8mm-10mm-thicknesses/?attribute_dimension=0.6x200x300MM&amp;utm_term=3110">https://ti-alloys.com/product/rison-titanium-sheets-plates-commercial-pure-grade-2-0-5mm-0-6mm-0-8mm-1mm-1-5mm-2mm-3mm-4mm-6mm-8mm-10mm-thicknesses/?attribute_dimension=0.6x200x300MM&amp;utm_term=3110</a>)</small>
Components (sensors, LED, Microcontroller).....	\$25.81	
Battery Module (Charging included).....	\$1.50	<small>(<a href="https://www.adafruit.com/product/2011">https://www.adafruit.com/product/2011</a>)</small>
Bluetooth Module.....	\$0.95	<small>(<a href="https://www.adafruit.com/product/4076">https://www.adafruit.com/product/4076</a>)</small>
<b>TOTAL.....</b>	<b>\$45.54</b>	

## DEVICE SCHEMATIC

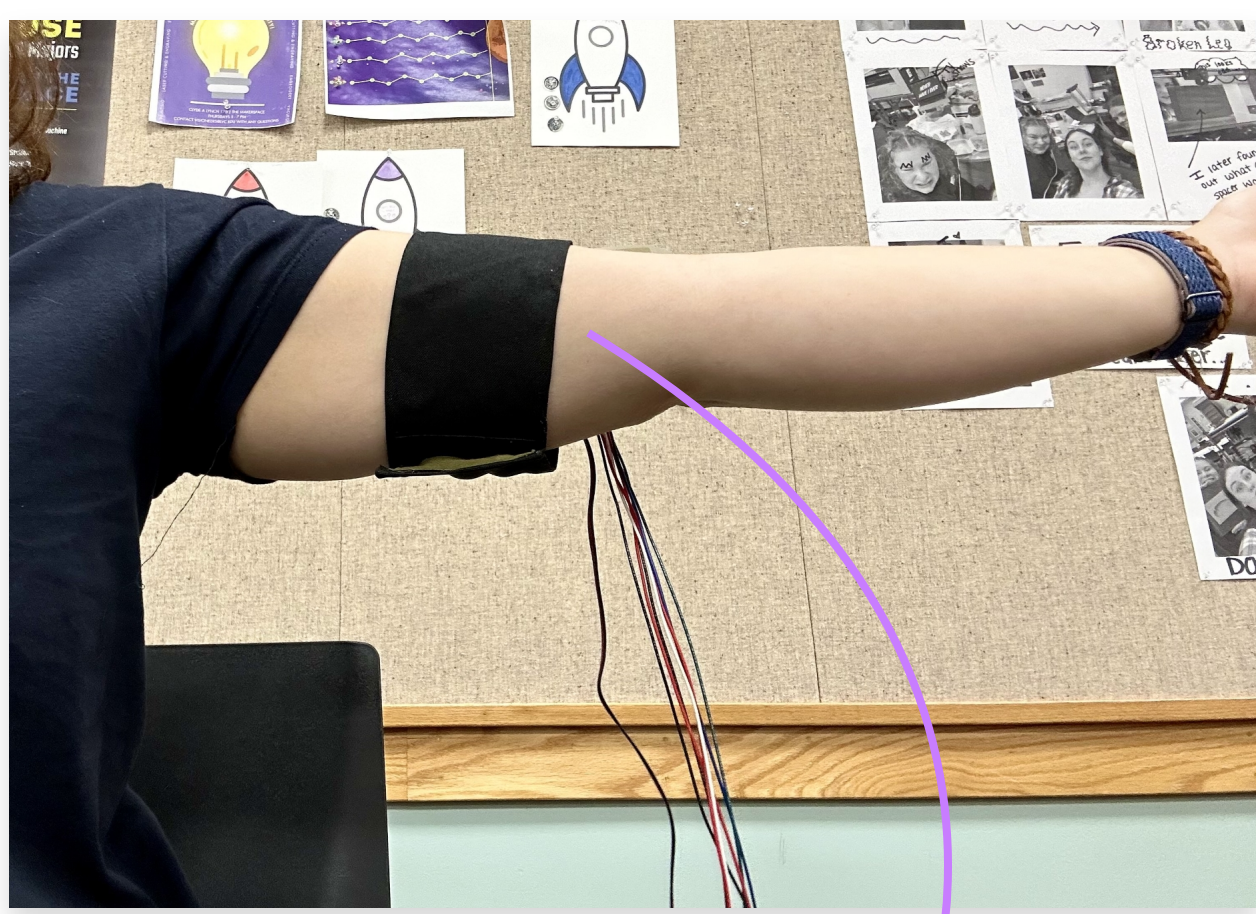
### Components:

- Arduino Uno Microcontroller
- Green light Heart Rate Sensor
- Temperature Sensor
- Tricolor LED
- 3x 250 Ohm Resistors

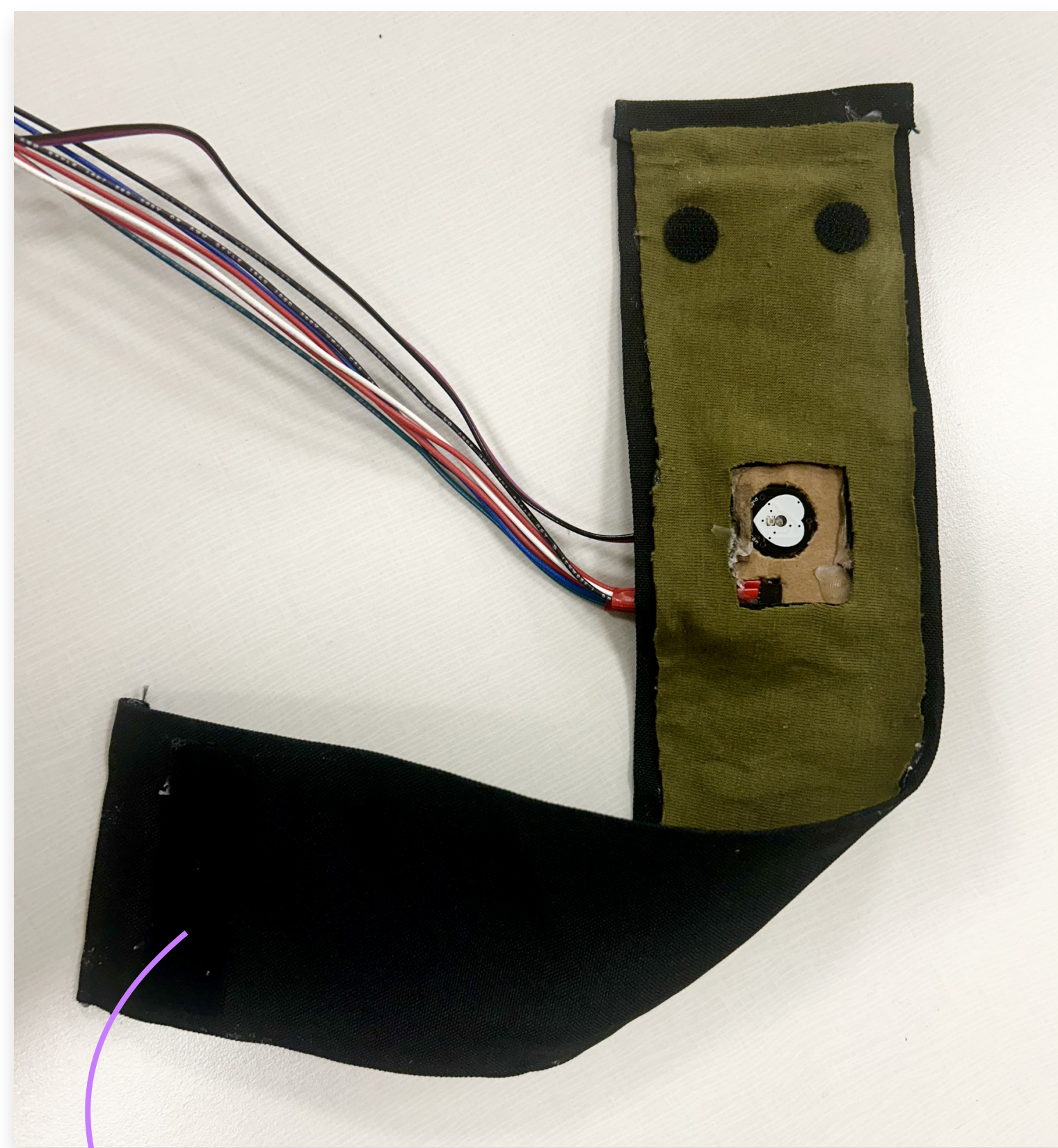
This device is wireless, although the prototype is not. The prototype's microcontroller is off board due to size and is not bluetooth compatible due to lack of resources.



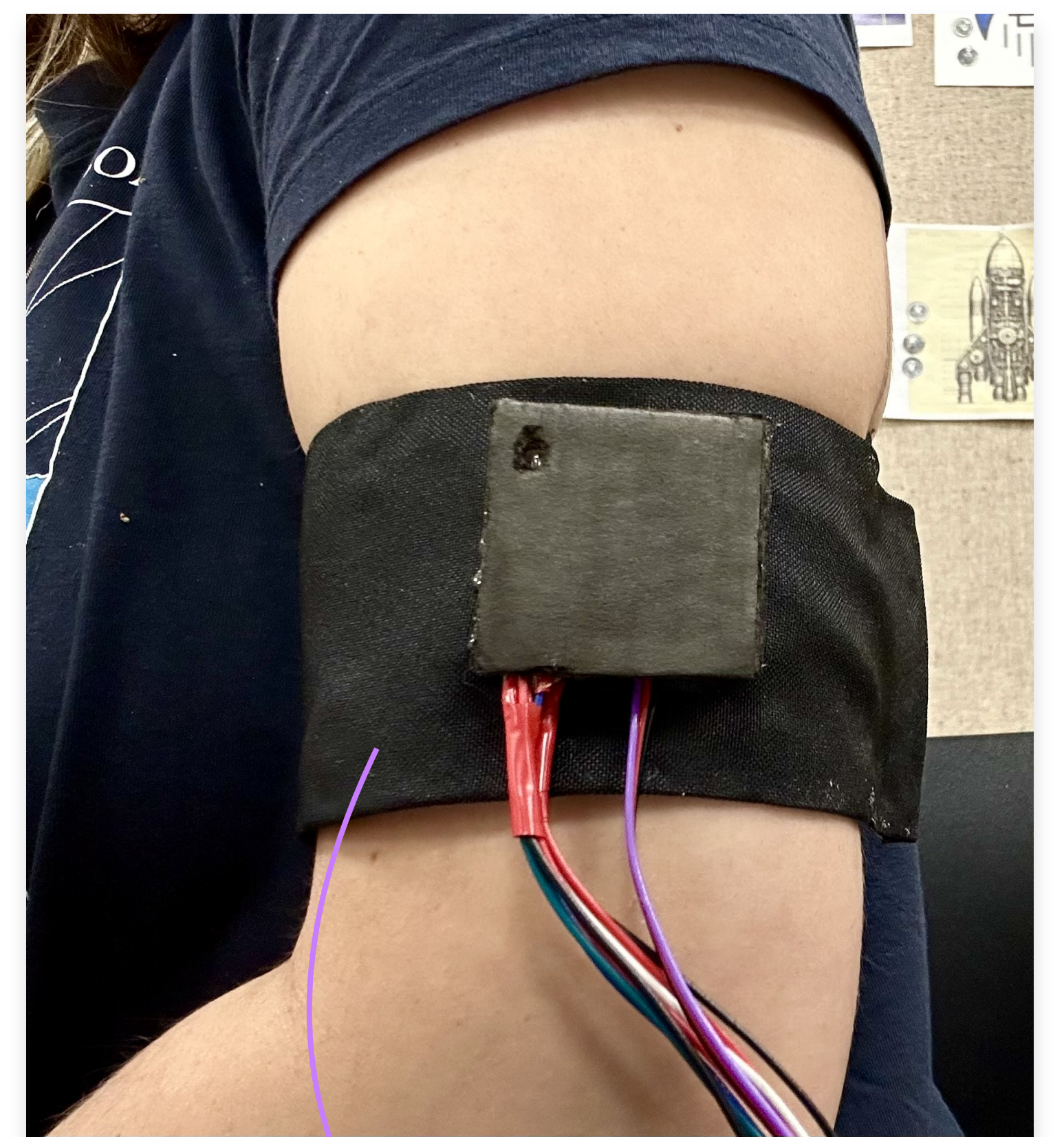
## DEVICE IMAGES



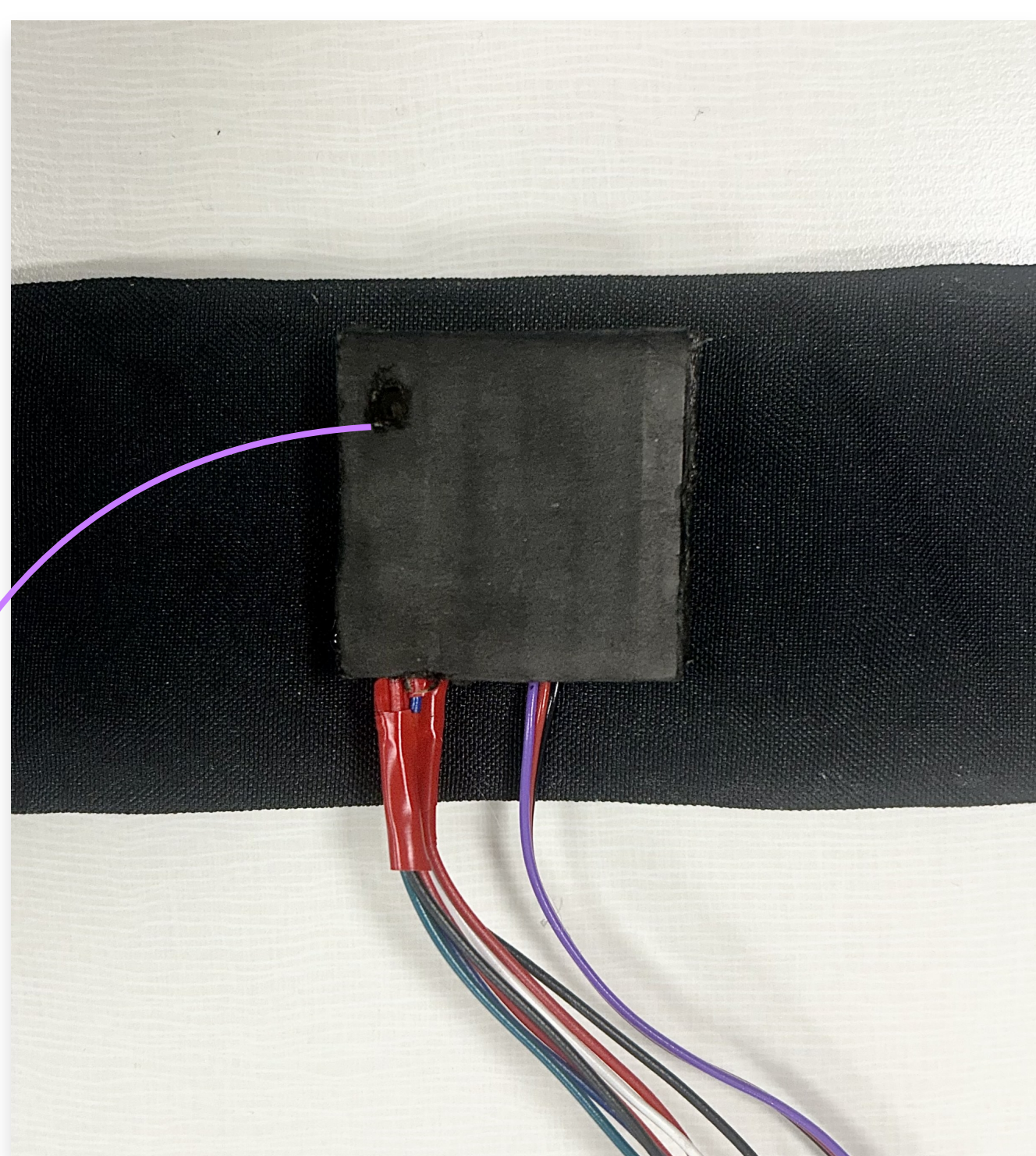
Device on a "patient's" arm.



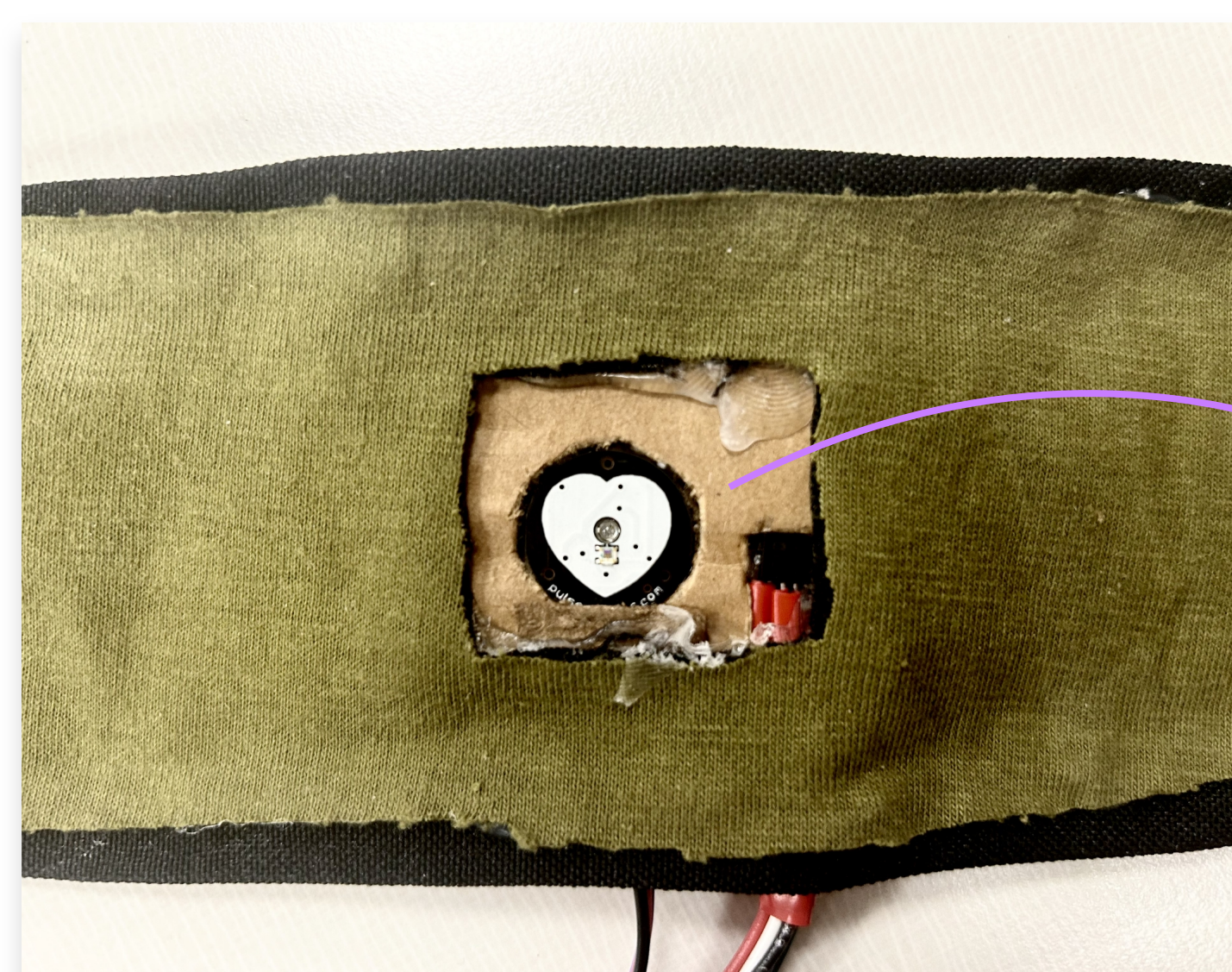
Device secures to a patients arm using velcro and elastic.



Device on a "patient's" arm.



LED to signal battery status (green = full, red=low)



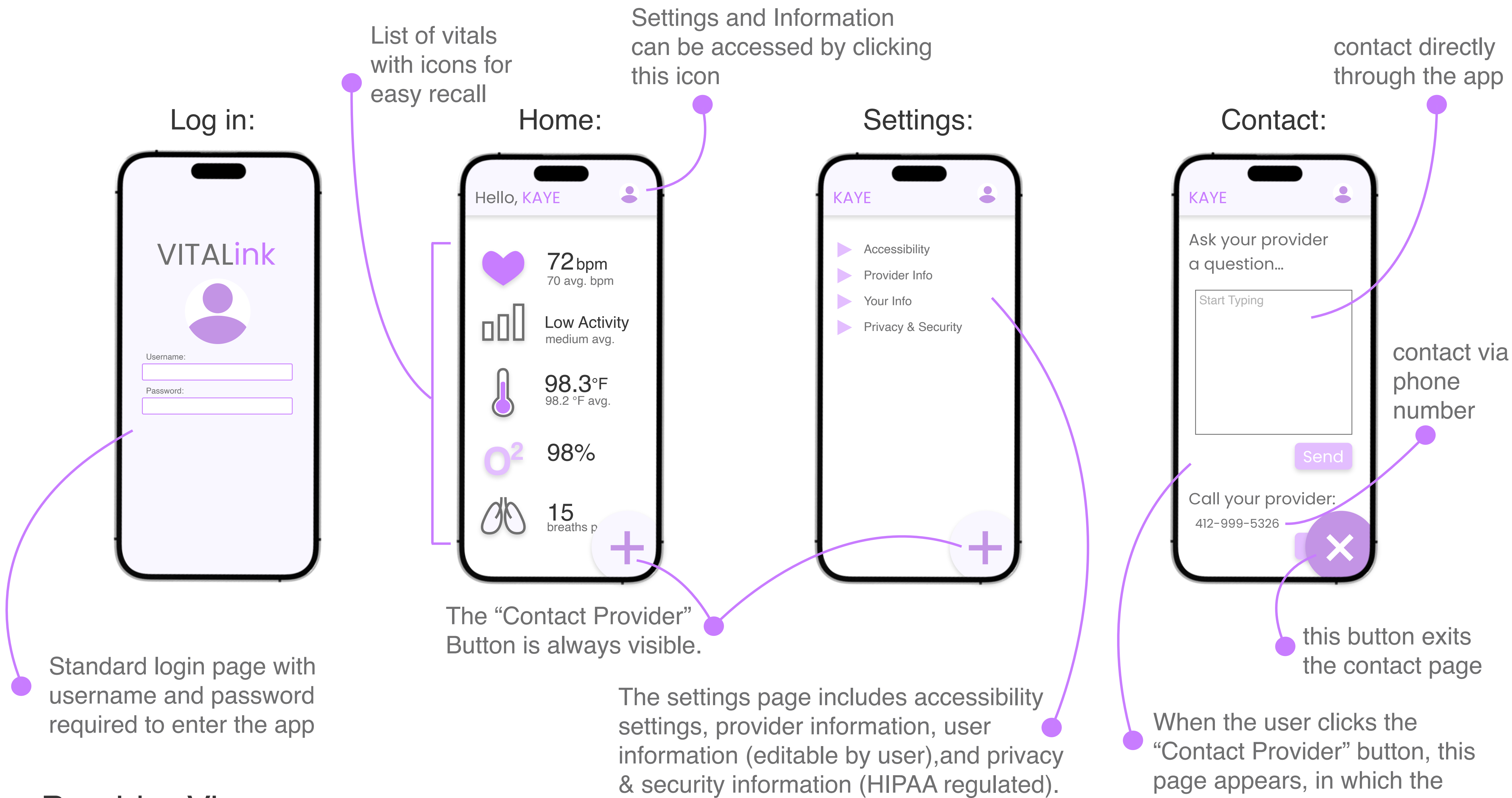
This is where the actuators make contact with the skin.

## APP INTERFACE

### Patient View:

Because this system is intended for monitoring vitals, it does not provide correctional feedback to the user. Instead it simply provides the vitals it records, accessible through the app. This data is automatically encrypted and sent to the user's healthcare provider. The user must consent to this during the onboarding process, per HIPAA regulations.

(<https://www.paubox.com/blog/how-to-ensure-hipaa-compliance-when-using-rpm-devices>)



### Provider View:

