AUTOVEST
ALERT AND RESPOND
UNIQUE RISKS TO SURFERS

- Can’t wear Personal Flotation Device (PFD) while paddling/swimming
- Bulky and unstylish
- Inflating PFDs not designed for surfing.
- 60,000 drowning rescues by surf lifeguards per year in America. (NOAA)
AUTOVEST

- Compact and Comfortable
- Wear while swimming
- Automatic Operation
  - Depth Sensor
  - Blood Oxygen Monitor
  - Water Sensor
- Manual Operation
  - Pull Tab
  - Inflation Tube
- Designed for Extremes
- Surfers are the Lead User
BUOYANCY

- One liter of gas provides about 10N of force
- The average person is neutrally buoyant
- Our intended purpose only requires 50-150N
<table>
<thead>
<tr>
<th>Part</th>
<th>weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Oxygen sensor (Detects Drowning)</td>
<td>.05-.1 kg</td>
<td>$38-$675</td>
</tr>
<tr>
<td>Depth sensor (Detects depths deeper than people swim)</td>
<td>.075-.3 kg</td>
<td>$25-$2000</td>
</tr>
<tr>
<td>Water sensor (arms system)</td>
<td>0.075-.3 kg</td>
<td>$2-$75</td>
</tr>
<tr>
<td>Vest material</td>
<td>.4-1kg</td>
<td>$5-$20</td>
</tr>
<tr>
<td>CO2 cartridge (Inflates vest when activated)</td>
<td>100 grams</td>
<td>$3-$6</td>
</tr>
<tr>
<td>Transponder (communicates data inflation system)</td>
<td>.005-.4</td>
<td>$1-$30</td>
</tr>
</tbody>
</table>
POTENTIAL ELECTRICAL CHALLENGES

- Keeping price affordable
- Configuring blood oxygen sensor for aquatic applications
  - Sensing drowning in water is a daunting task
- Electrical engineering training
TESTING

- Wearability
  - Good mobility and comfort
  - Challenging to put on
  - Sizing to different people

- Floating
  - Ample buoyancy
  - Not sufficiently constrained
REFERENCES