Helmet 911

Orange B Sketch Model Review

Introduction

- Problem
  - 580,000 emergency room visits in US each year from crashes involving cyclists
  - Cyclists can have an accident and may not be able to call 911
- Most Likely to Affect
  - Long distance cyclers riding alone
  - Adventure Cyclists or Bike Tours

Solution

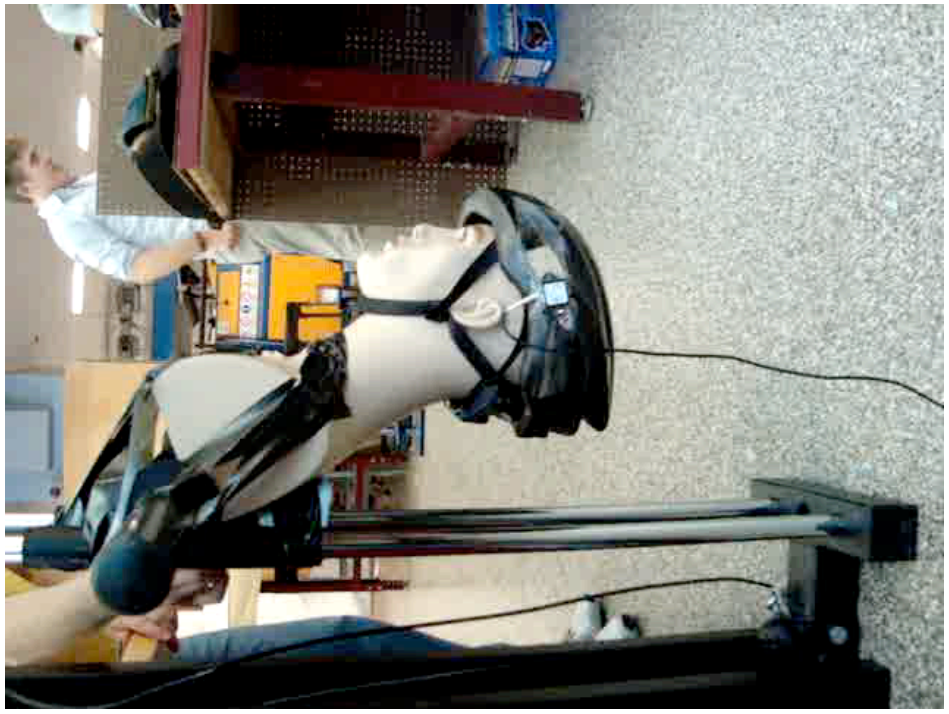
- Helmet that
  - Senses Impact
  - Calls 911
  - Reports Location

Technical Challenges

- Impact sensor: Differentiate between crash impact and normal activities
- Location of sensors
- Size and weight of components
- 911 transmission

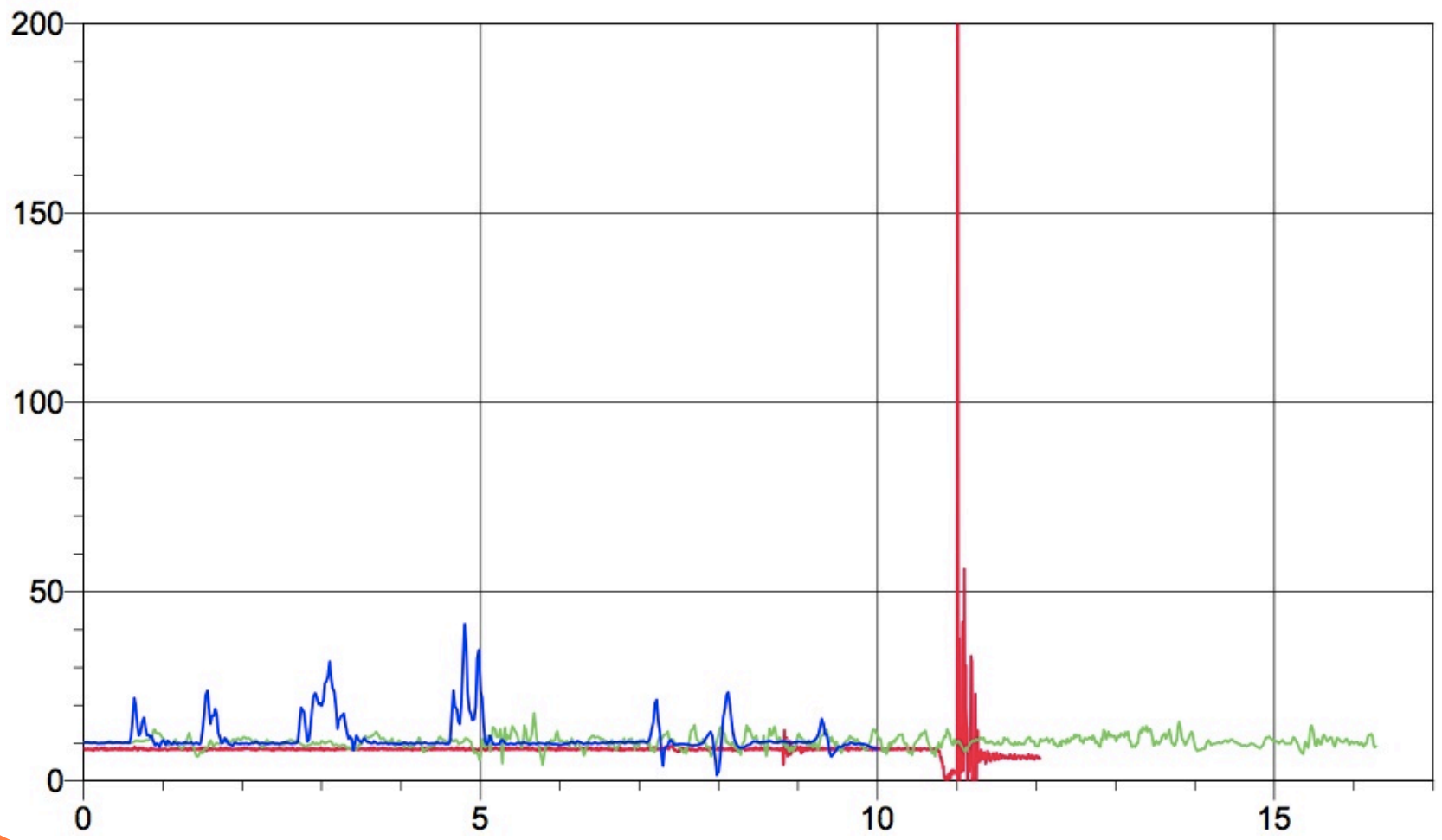
Helmet Testing

- Dropped helmet from various heights, measured G-Forces
- Normal Cycling Trial

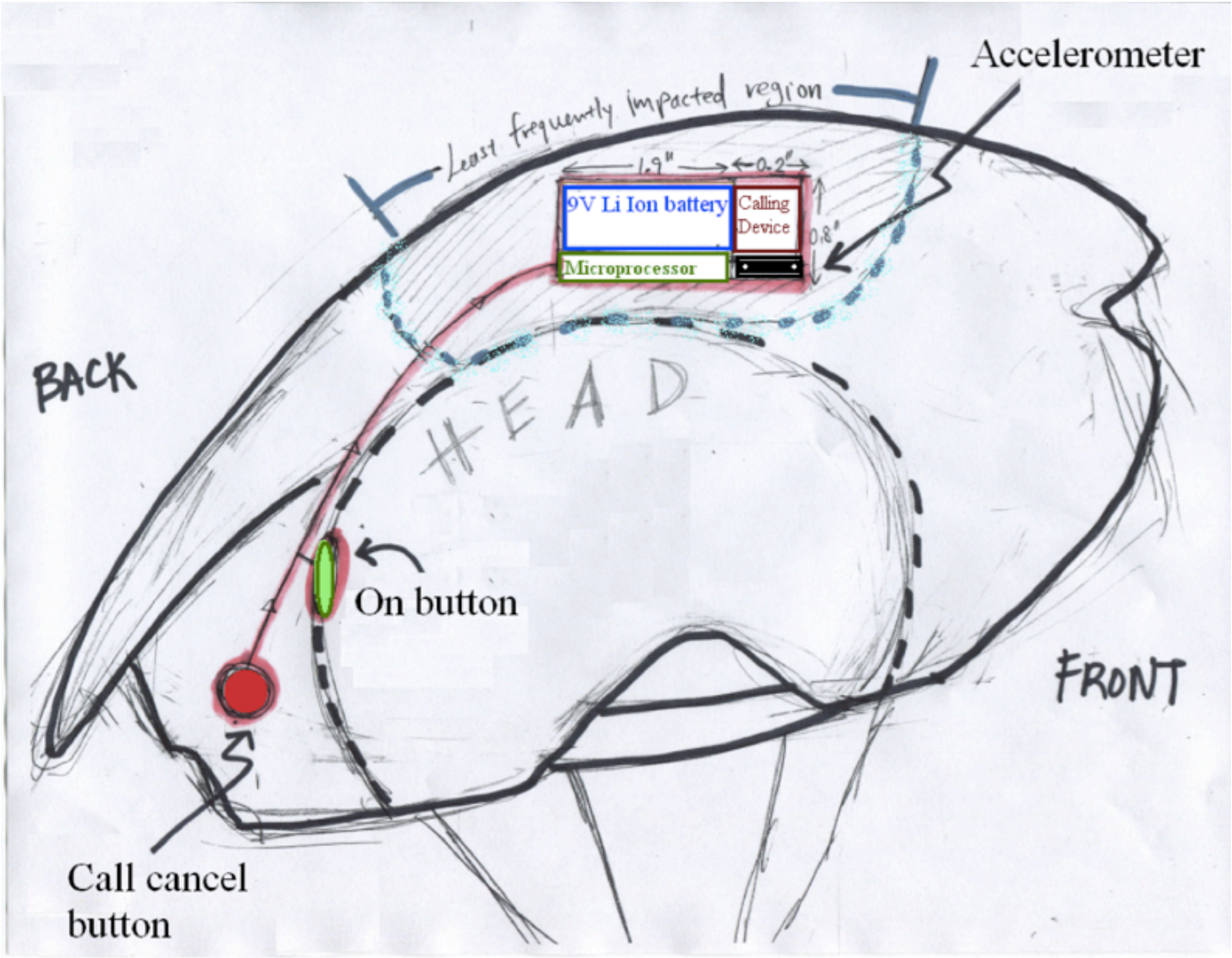


Results

- Shaking Head, Cycling, Impact (6”, 4mph)



Sensor Placement Findings



Component Size, Weight

Ultralife 9 Volt Lithium Battery

0.69"

1.9"

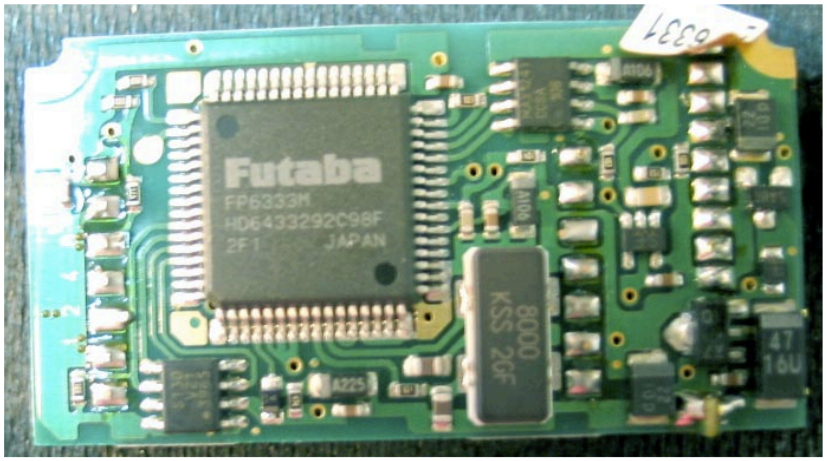
1.04"

Weight: 0.1 lbs

70G Accelerometer

0.2"

0.2"



Microprocessor

Transmitting Call and Location

- E911 Capable Wireless (location info)
- Available in 96% of US locations
- Public Safety Awareness Point (PSAP)
- Cell tower triangulation or GPS

Attitude Survey

- 75 people from MIT Cycling Club responded
- 40% in last 5 years have been in one or more accidents requiring medical attention
- Most would pay $50-100 for this feature
- Concerns: weight, aerodynamics, subtlety, false positives, weather proof

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