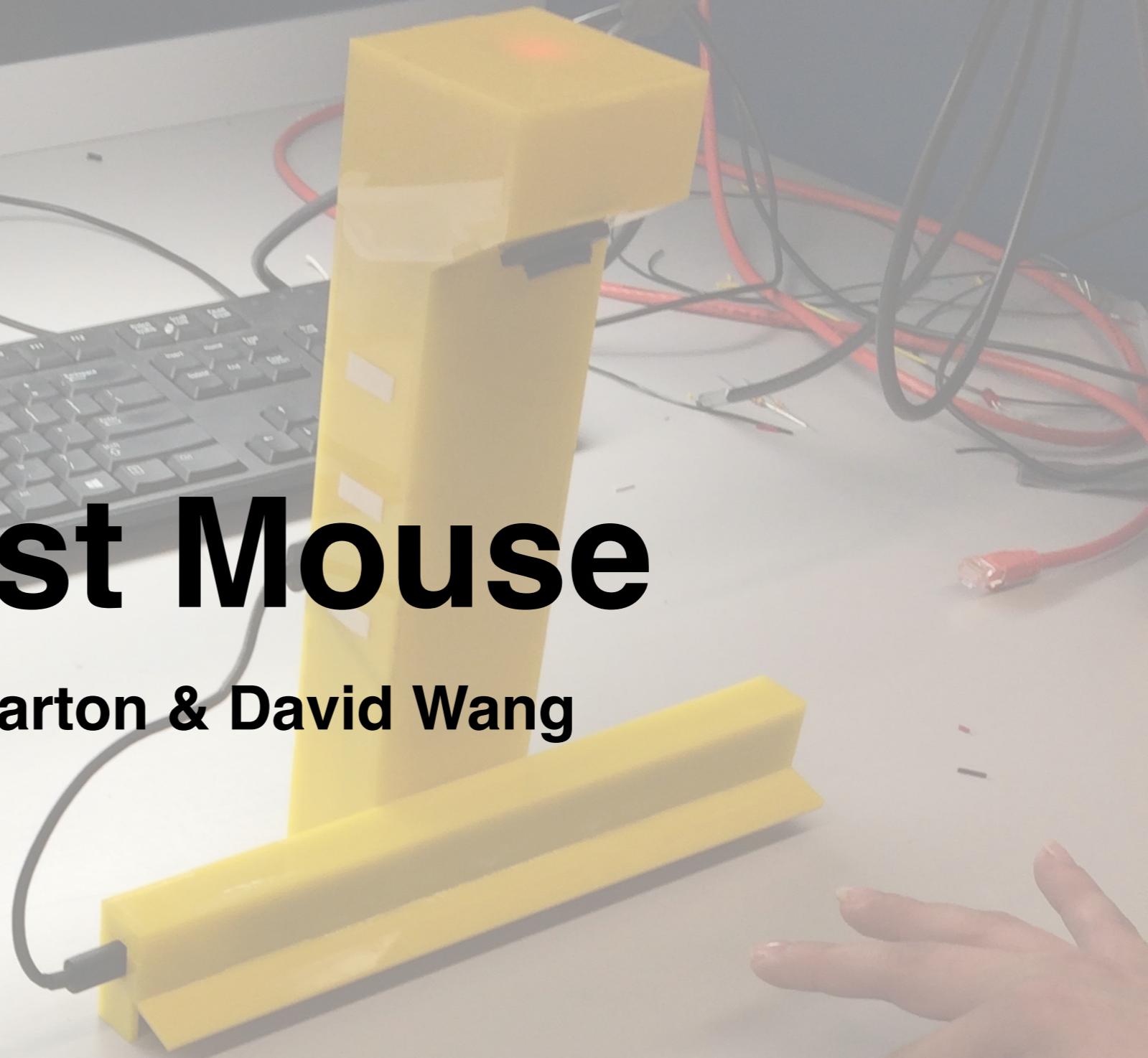
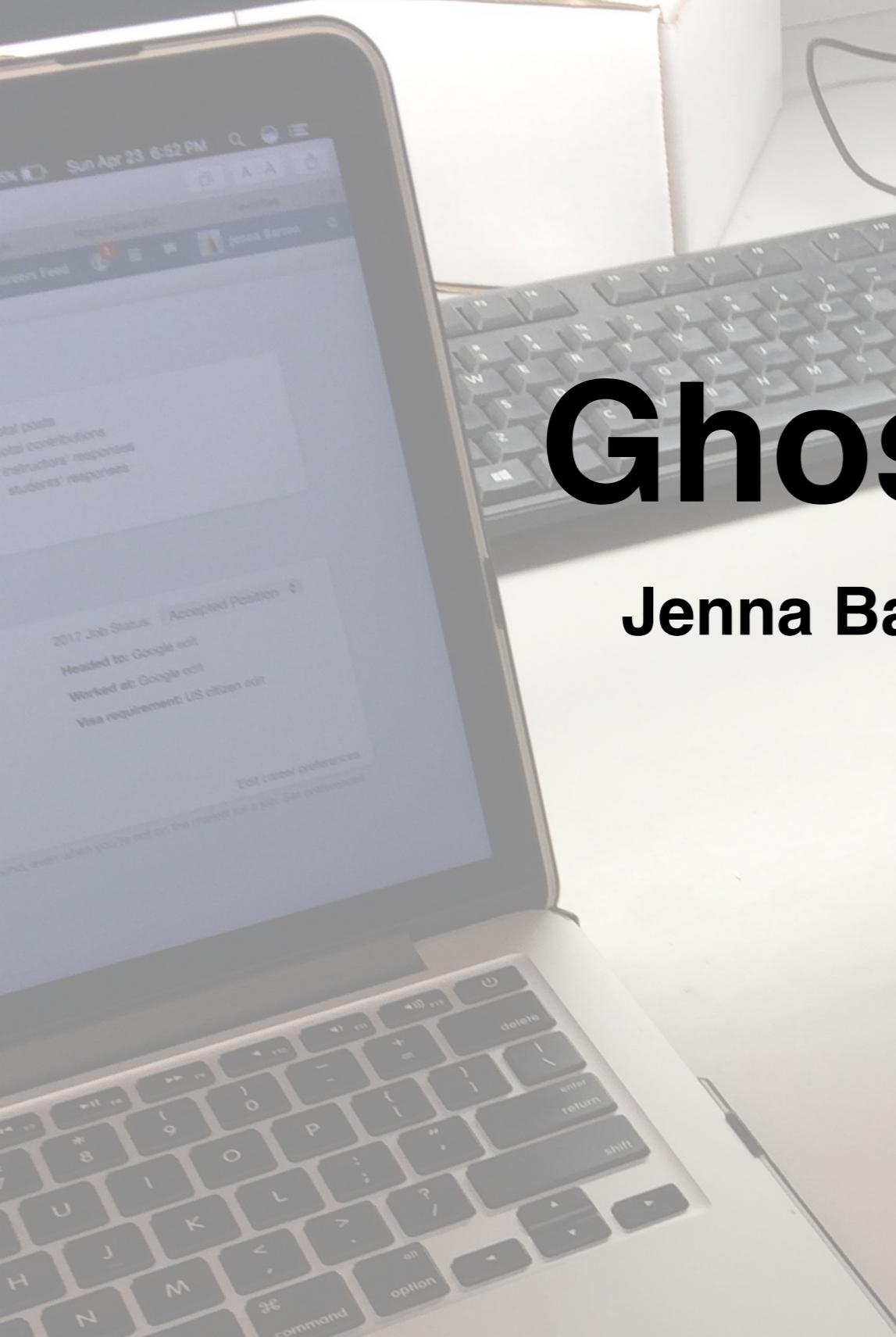
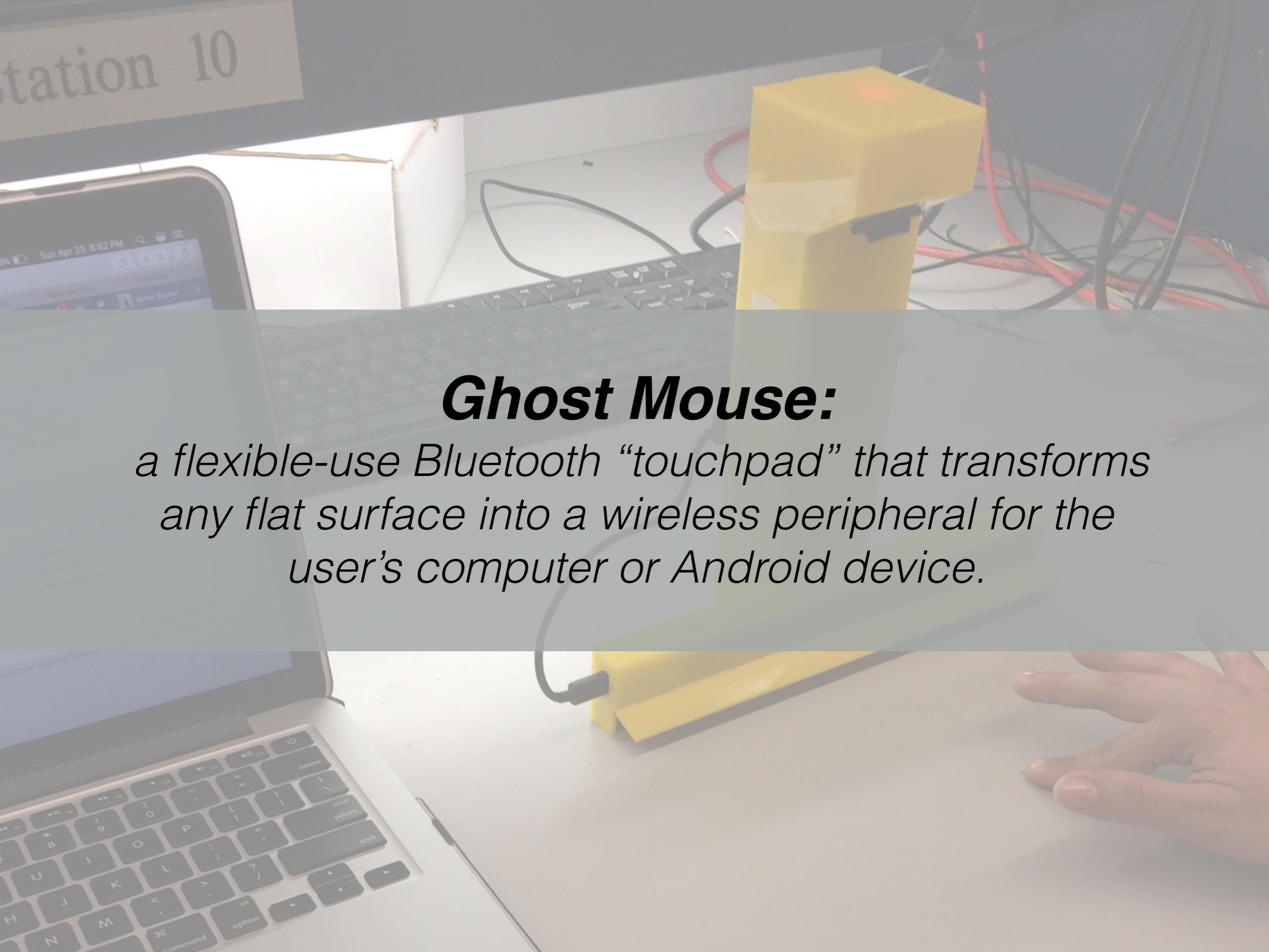


station 10

# Ghost Mouse

Jenna Barton & David Wang



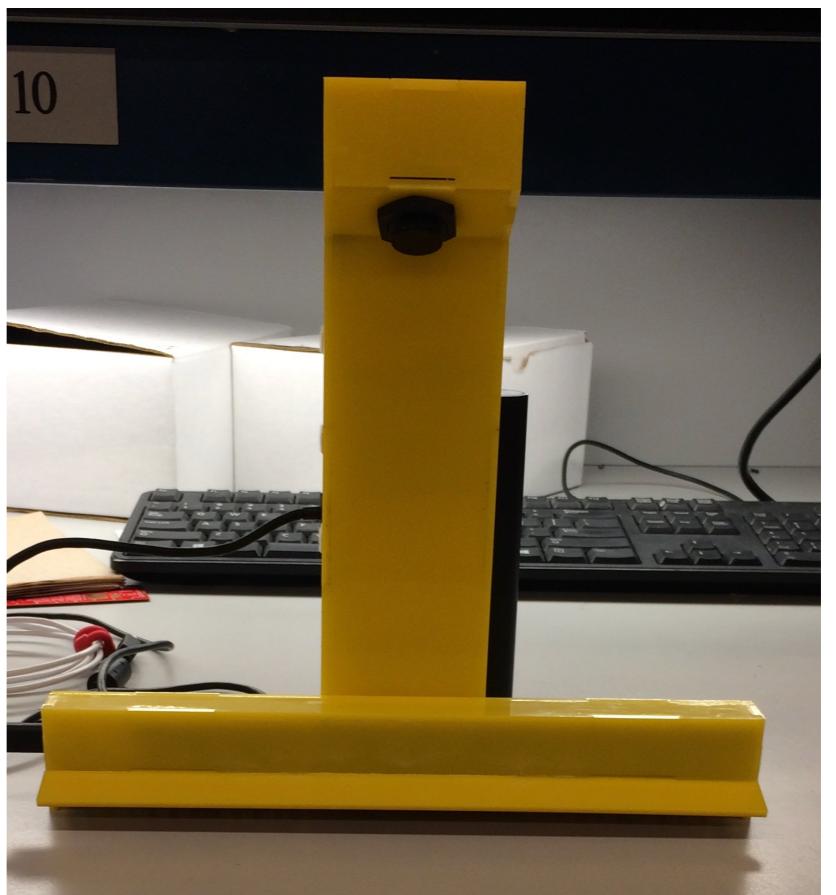


## ***Ghost Mouse:***

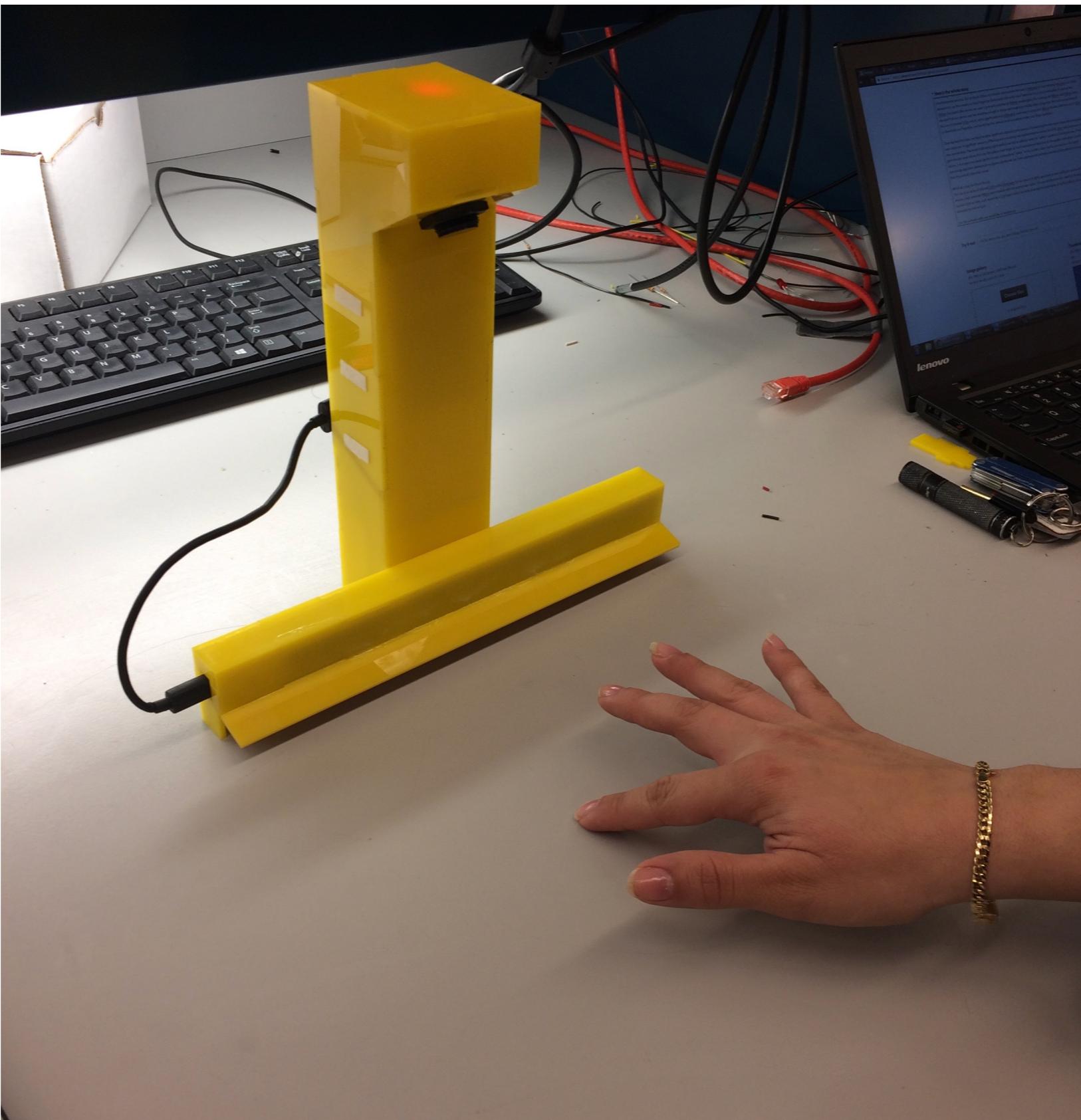
*a flexible-use Bluetooth “touchpad” that transforms  
any flat surface into a wireless peripheral for the  
user’s computer or Android device.*

# Key Features

- Finger gesture recognition
  - Swipe to move cursor
  - Tap to click
- Bluetooth connectivity to Android/PC
- Portable, collapsible design



# What the User Sees



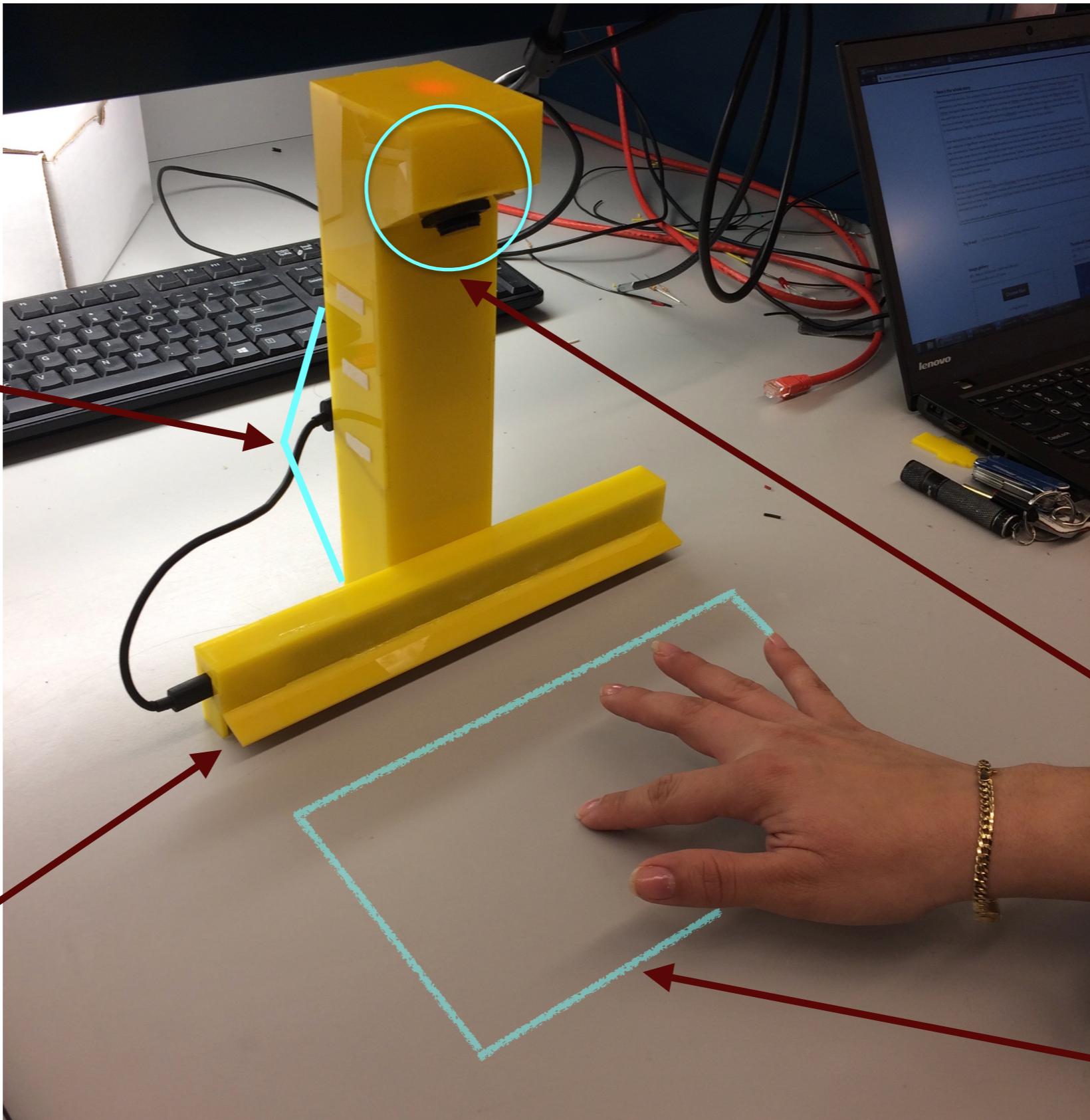
# Behind the Scenes

Portable Power Supply

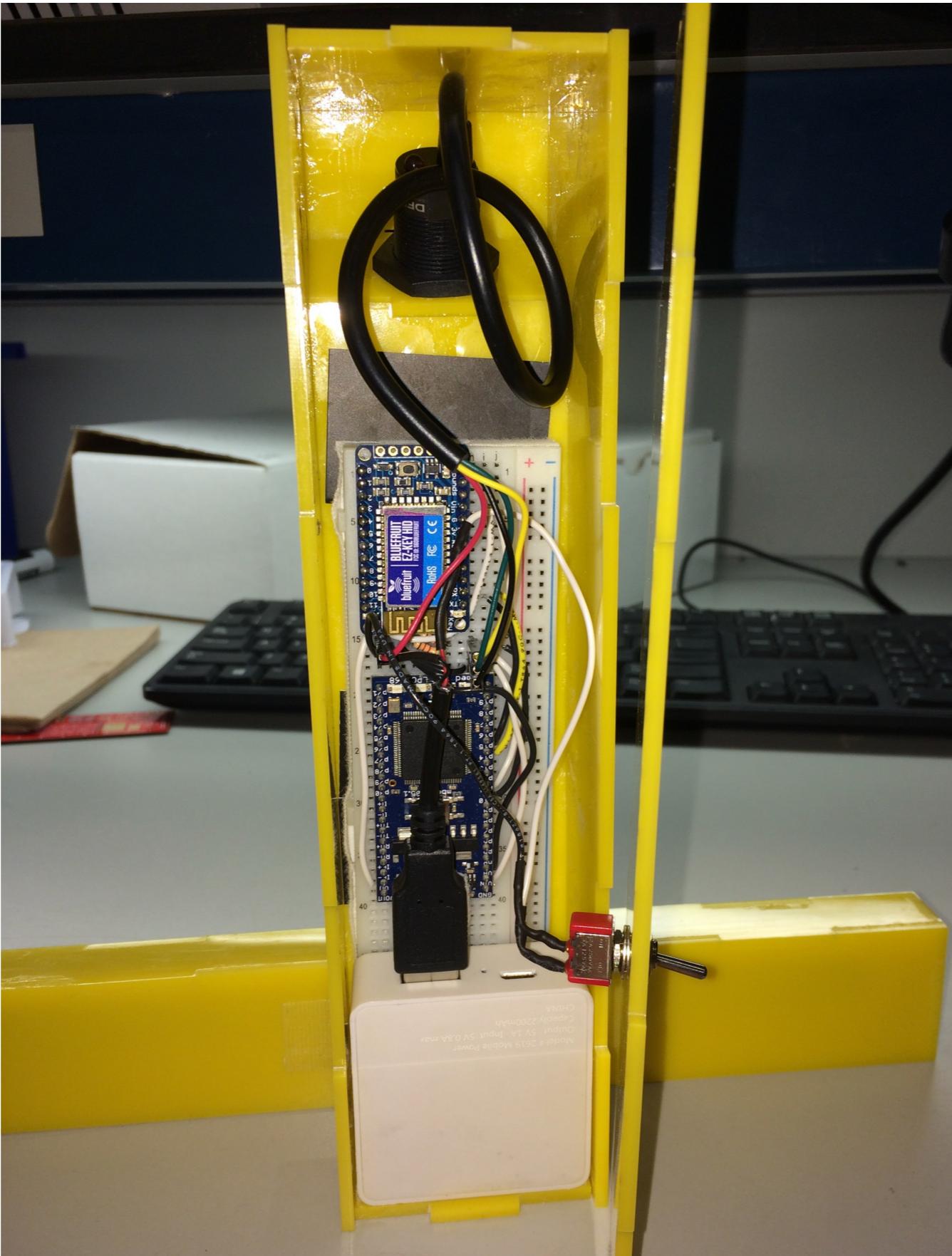
IR LEDs

Camera

“Touchpad”



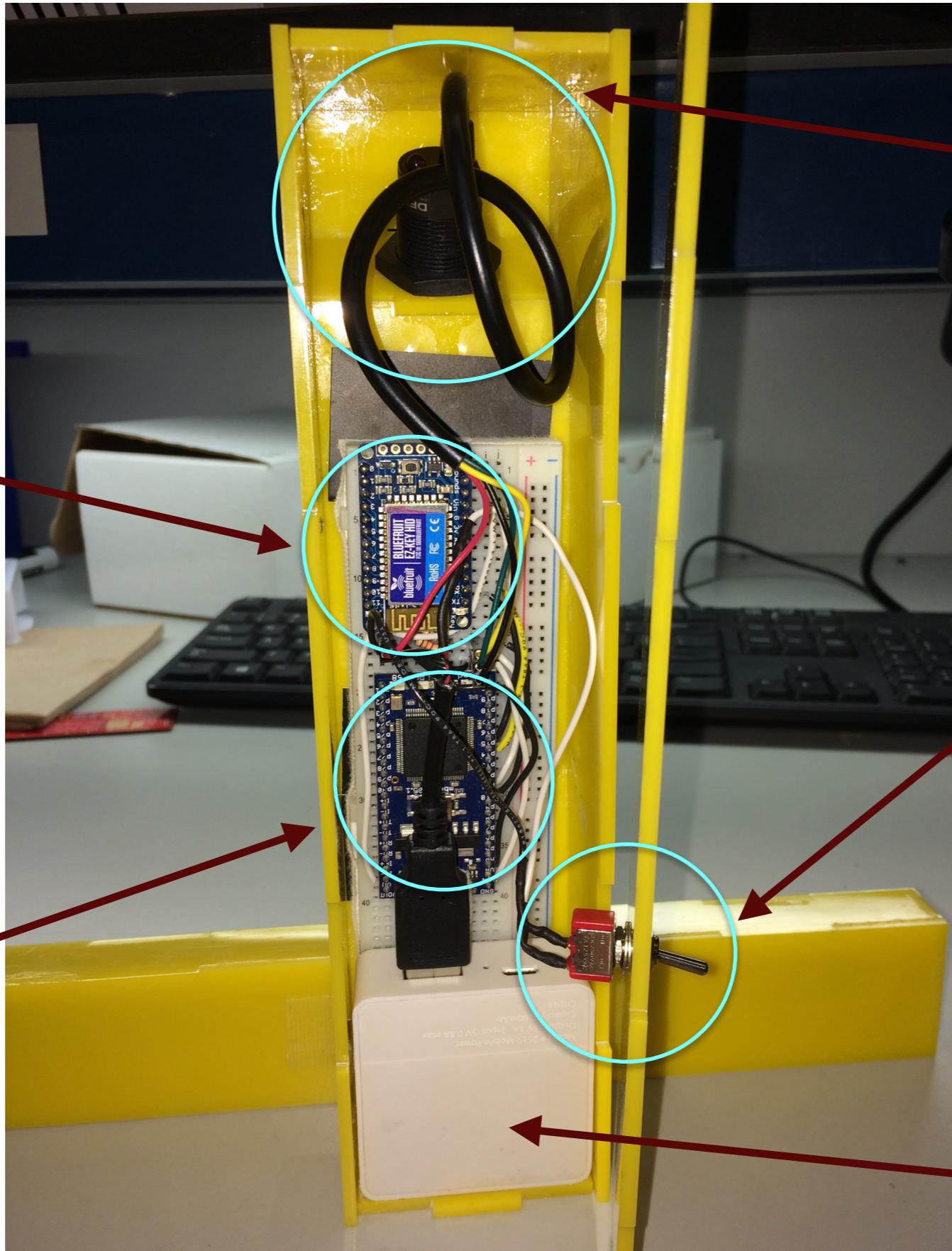
# What's Inside



# What's Inside

Bluefruit  
EZ-Key HID

mbed

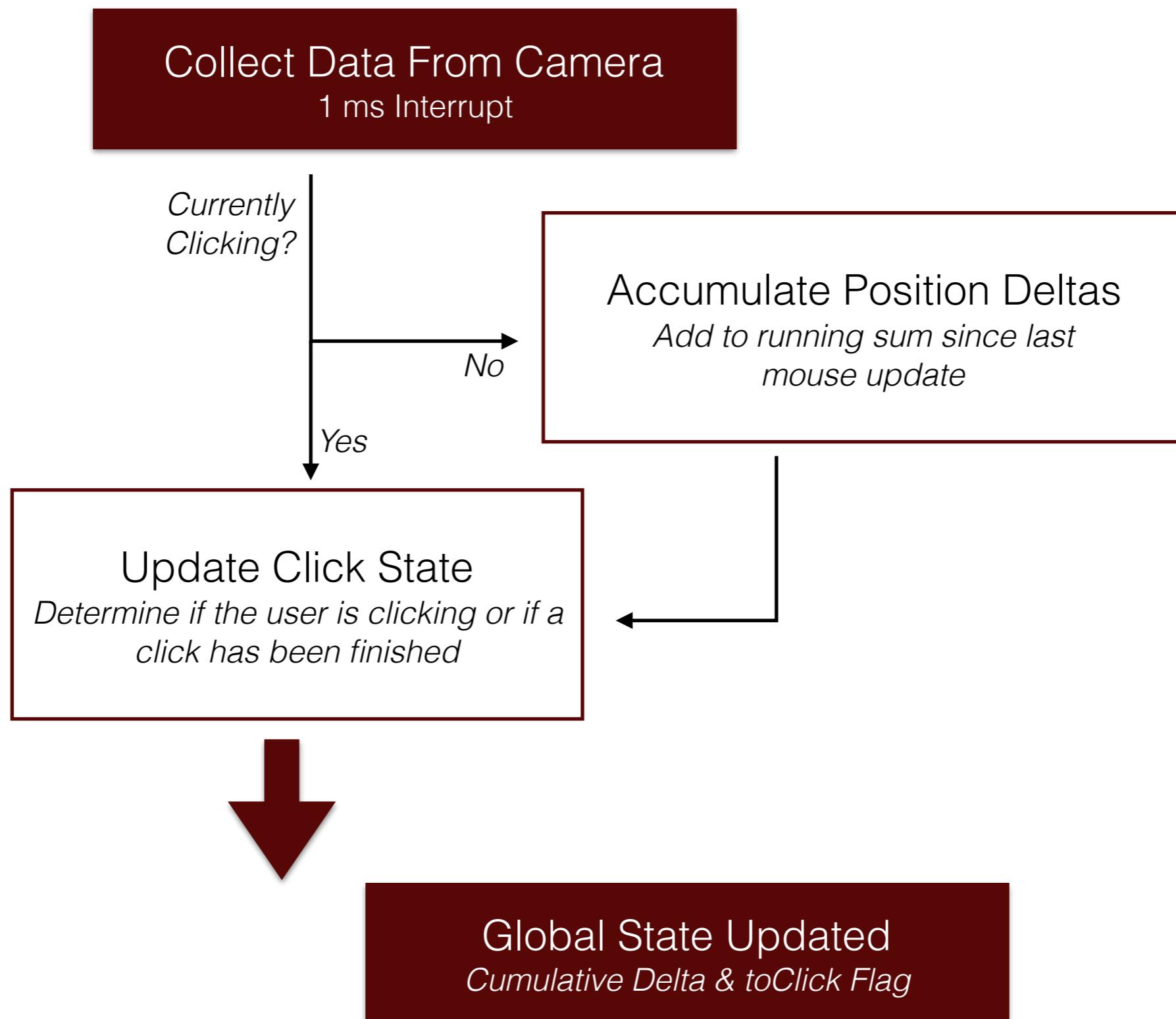


Camera

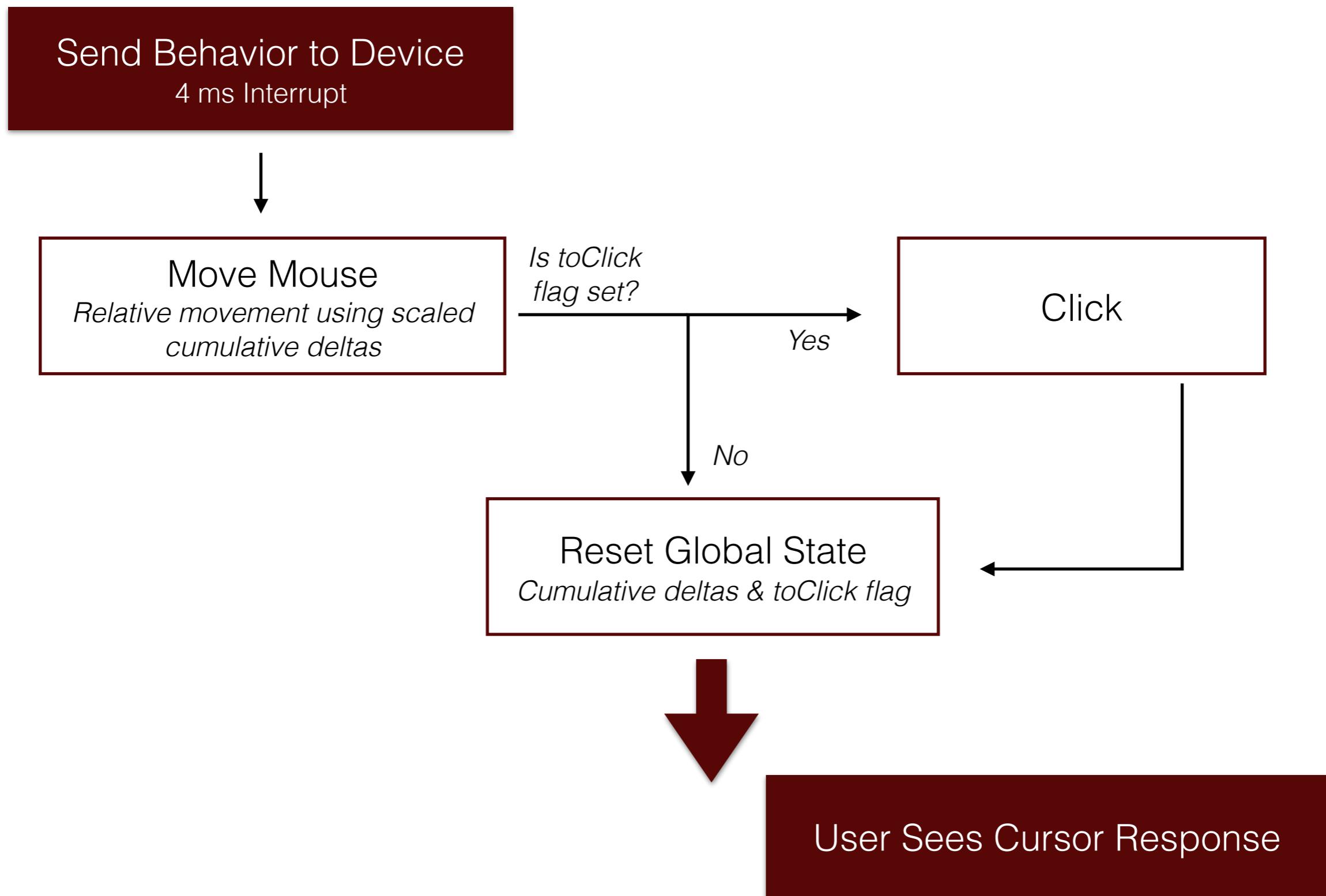
Power Switch

Portable Power  
Supply

# Data Collection Logic Flow



# Data Submission Logic Flow



# Data Collection Challenges

The Issue: Plane of IR Light

Users needed to create IR hotspots  
by breaking the plane of IR when  
making contact with the surface

What Failed: Line Lasers

980nm and 808nm lasers tested

The Solution: IR LEDs

Less collimated but could be obtained  
in the desired 940nm format

# Data Processing Challenges

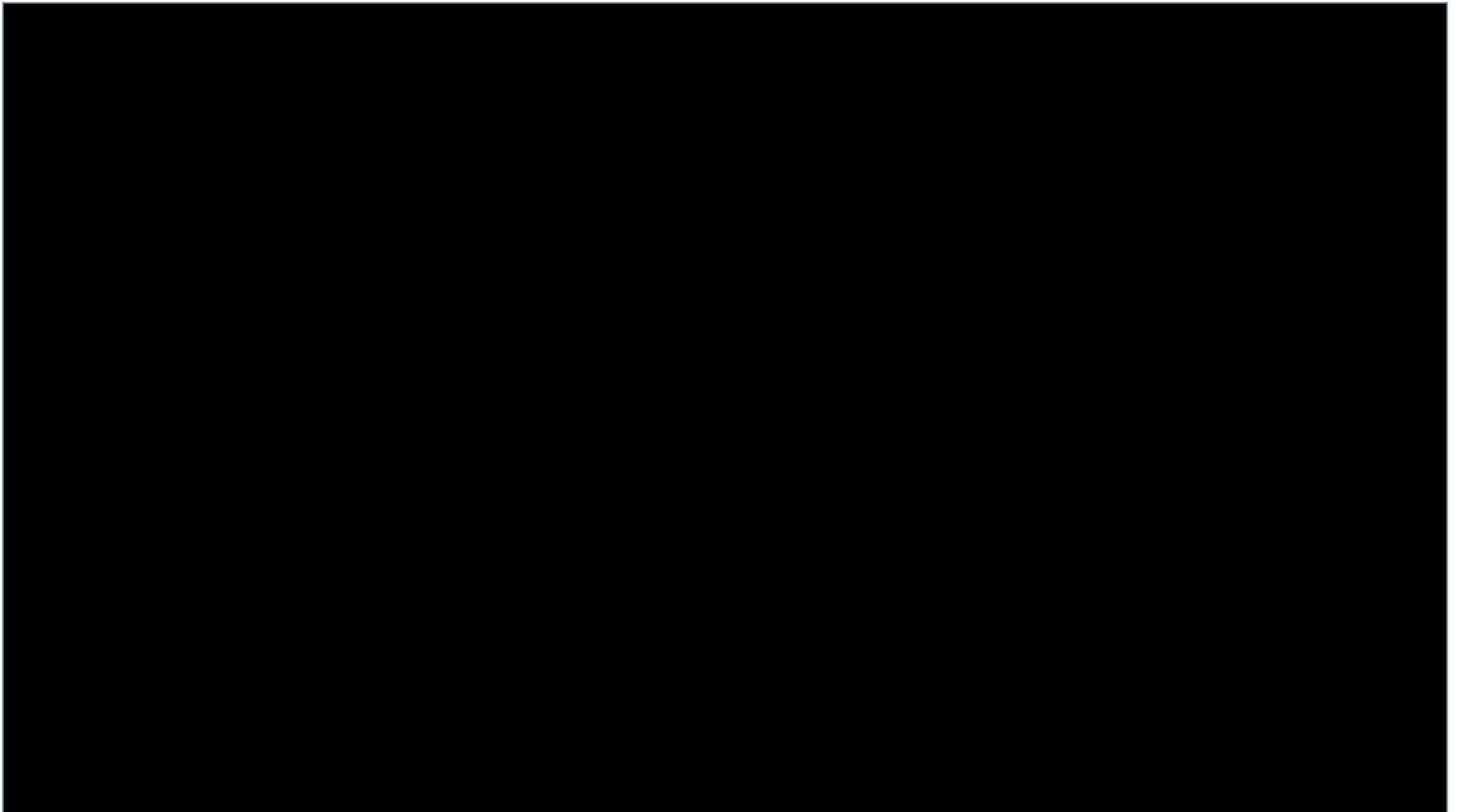
The Issues: Irregularities and Unintentional Movement

- Drift, Jitter, and Jumpiness
- Z-Axis Spikes

The Solution: Signal Processing

- Ceiling on displacement for a single delta reading
- Stability checking for clicks

# The MVP

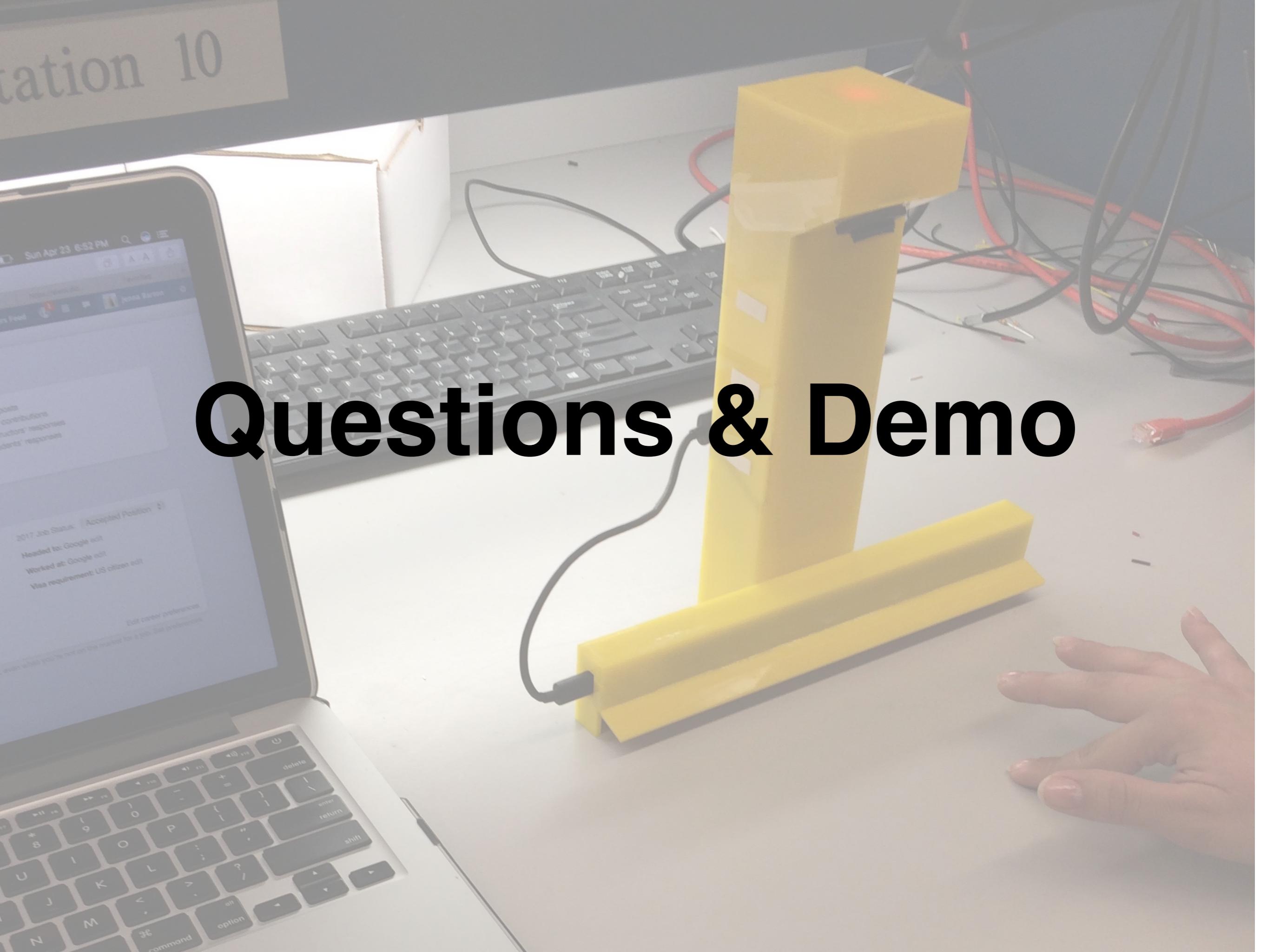


# The Final Product

## ***Improvements:***

- Compact assembly is 60% of initial height
- Larger touch area due to angled camera
- Powered by internal battery
- Entire unit is fully portable and self-contained
- Collapses to be more compact when not in use





# Questions & Demo