



UC Berkeley  
Interactive Device Design  
CS294-84/ME290U Fall'14

Andrew Head  
Christine Gregg  
Zhiwei Wu  
Michelle Galembo

# Astute

## Bringing Measurement to Art Interaction

[www.gallerypaths.com](http://www.gallerypaths.com)

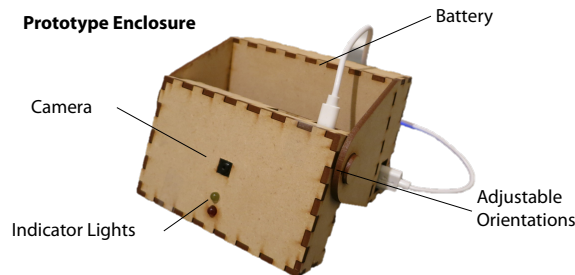
### Why Measure Interaction?

Evaluating museum visitor interaction with art and exhibits is an ongoing challenge for curators and artists. Such evaluation, if any occurs, must be done by direct observation. Leveraging technology to quantify interaction can offer a new tool for galleries and museums to understand the long term effects of design decisions and educational engagement initiatives.

### Who is it for?

Gallery and museum curators interested in quantitatively evaluating the impact of design decisions within a museum space and understanding visitor trends. Secondary users include artists interested in data about their work.

### Prototype Enclosure



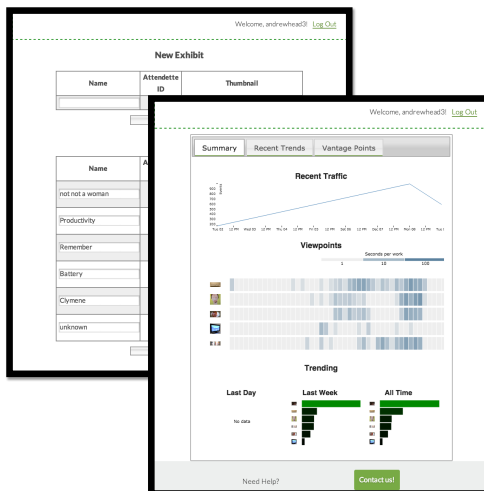
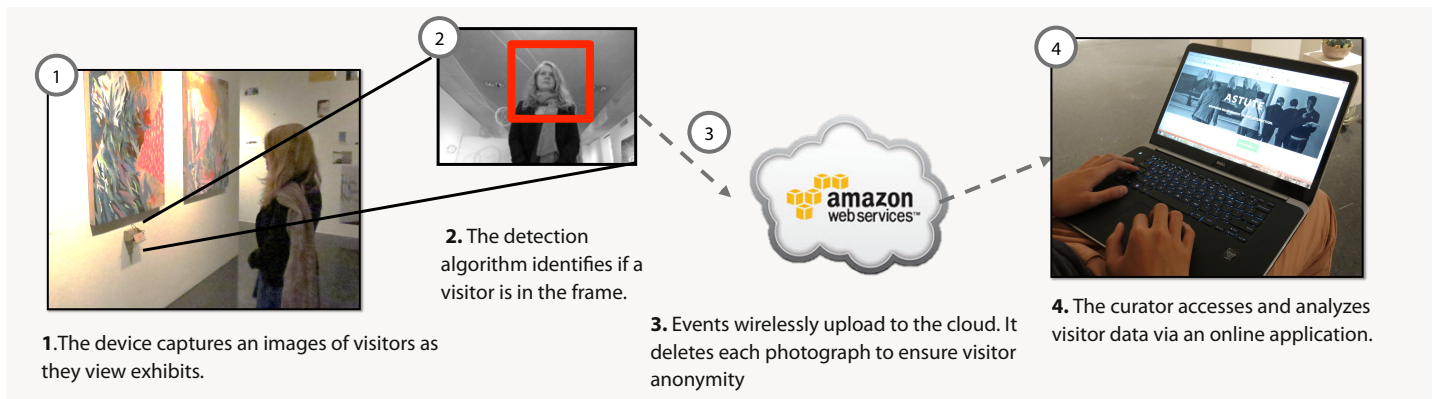
### Easy to Install. Easy to Use. Easy to Analyze.

Astute devices install in seconds with residue free adhesive strips and automatically update wirelessly. Just plug in the battery and begin detecting. Indicator lights confirm proper operation to ensure appropriate viewing angle. Adjustable orientations and mounting are designed to fit any exhibit.

### Device Hardware

A Raspberry Pi B+ board and Raspberry Pi Camera Module analyze images of the gallery space. Computer vision (OpenCV) detects visitor presence and extracts positional information. To respect visitor privacy, all data is anonymous: no pictures are uploaded to the cloud and all are deleted after processing.

### How Does it Work?



### Analytics UI

A web UI enables exhibition designers to gauge interest in their gallery. Users open new exhibitions, define exhibits, and pair devices with the works. Through the analytics UI, users can see which works have gained recent interest, measure changes in interest over time, and examine visitors' viewing distance from each work. In this way, they gain deeper understanding of how visitors interact with the gallery.

### Worth Ryder Gallery Installation

Pilot tests were conducted in the Worth Ryder Gallery at UC Berkeley during their Post Glitter exhibition. Multiple detection schemes were evaluated, including facial recognition, QR code detection, and other computer vision techniques. The final prototype is a culmination of lessons learned from these studies.

