

# Technical Review 2

Interactive Calculus  
March, Matthew, Judy  
Software Design Spring 2016

# Agenda

- Agenda and Refresher
- Demo
- OpenCV Color Calibration
- On Curve Smoothing
- You try!
- Surveys

# BACKGROUND/INTRODUCTION

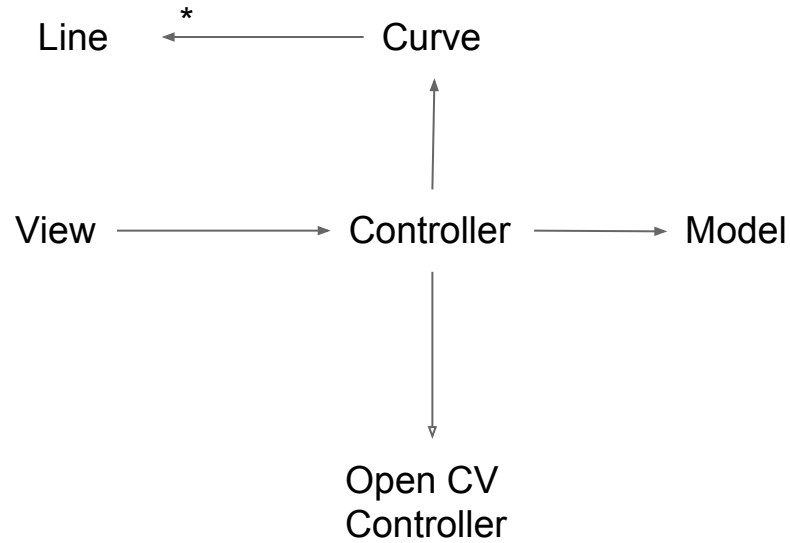
Interactive calculus app

Purely visual and geometric

Mouse and Open CV control

CODE DEMO!

# UML



# Open CV color calibration

```
(grabbed, frame) = self.camera.read()
```

```
    if grabbed:
```

```
        frame_size = frame.shape
```

```
        frame_ct = (frame_size[1]/2,frame_size[0]/2)
```

```
        print frame[frame_ct[0],frame_ct[1]] # print out the color of the center in BGR
```

Commented code below tries to find the average color of the center square:

```
        # pixels = [frame[i,j] for i in range(frame_ct[0]-10,frame_ct[0]+10) for j in range
(frame_ct[1]-10,frame_ct[1]+10)]
```

```
        # self.avg_col= (int(np.mean([px[0] for px in pixels])),int(np.mean([px[1] for px in
pixels])),int(np.mean([px[2] for px in pixels])))
```

```
        # if self.avg_col != self.prev_avg_col:
```

```
            # print self.avg_col
```

```
        # self.prev_avg_col = self.avg_col
```

```
        cv2.rectangle(frame, (frame_ct[0]-50,frame_ct[1]-50),(frame_ct[0]+50,frame_ct[1]+50),
```

```
(0,255,255),2)
```

```
        cv2.imshow('Frame',frame)
```

```
        cv2.waitKey(1)
```

# Moving curve vs Moving Handles

Moving the Curve means that the user can touch any part of the curve and move it. This uses a Sigmoid function to ripple the displacement to the points next to it.

Moving Handles means that there are certain handles the user can move around freely. The line is interpolated through these handles (there could be an option to add handles)

**Thoughts?**

YOUR TURN TO TRY AND SURVEY TIME