Real-Time Mobile Augmented Reality
Using Markerless Subject Tracking

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**Motivation**

- Common methods for displaying augmented reality visuals utilize marker objects such as QR codes to track movement of subjects of interest
- This requires user interaction with the environment to place the markers on a surface, which is not always practical

**Project Goals**

- Utilize subject’s color and shape features to track and project augmented images without need for explicit markers
- Have algorithm run in real time on mobile Android devices

**Future Work**

- Handle minor occlusion of subject
- More realistic color matching/correction between user input image and camera scene
- Consider algorithm optimizations

**Method**

### Initialization

- GET USER IMAGE
- HSV COLOR MATCHING
- IDENTIFY SUBJECT
- COLOR
- LOCATION

### Frame Update

- GET CAMERA FRAME
- COLOR THRESHOLD
- ISOLATE CONNECTED COMPONENT
- HARRIS CORNER DETECTION
- UPDATE SUBJECT
- COMPUTE HOMOGRAPHY
- OVERLAY IMAGE

**Experimental Results**

- Able to track subject location and discern projective transform using detected corner positions
- System performs well when strong contrast exists between subject and surrounding area
- Algorithm successfully runs on Android device in real time

**Pipeline**

[DEMO]