Pool Table Recognition

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Current Systems

- Camera is mounted above the table
- Position of the table is known and constant
- Lighting is uniform
Motivation and Goals

- Use everyday camera system such as cell phone
- Recognize position of the balls on the table
- Show an ortho photo to aid in recognizing moves and angles
Implementation

- Convert image to hsv and find largest connected component
- Use Canny edge detector to find edges of the table
- Hough transform to identify the lines that lie on the edge
- Find intersections in the four corners
- Projective Transform with imwarp
Implementation

- Convert ortho photo to binary image
- Find contours and identify blobs that could be balls
End Result

- Find the x,y coordinates (in inches) of the balls on the table
- Provide ortho photo for user to find shots
Issues with my Implementation

- If balls overlap they are one big blob
- Hough transform often yielded more than the four edges
- Lighting casts dark shadows along the perimeter
- Sometimes the wall would be the biggest connected component
- More oblique angles made finding the table and balls harder
Future Work

- Given locations of balls, provide an optimal shot to take
- Real time using opencv
- Identify pool cue and align shots in image
Questions?