Computer Vision (Spring 2021) Problem Set #3

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3: Projective Geometry

Report what wrapping technique you have used and comment on what led you to choosing this method.

For my function “project_imageA_onto_imageB()”, I used a backward warping technique.
In order to do so, before utilizing “remap”, I used an inversed homography and chose to map pixels from my destination image to pixels in my source image. I used matrix algebra to dot the inversed homography with an array of the indices based on the shape of the destination image, linearized. The shape of the destination image is necessary for the array as in order to map from the destination to the source.
When testing the function, I first tried performing the dot of the homography, not inverted, with the array of indices based on the shape of the source image. Then, I used “remap” , but as a result, pieces of my source image appeared in random locations in the destination image.
The office hours video stressed the benefit of using backward warping, so after struggling with forward warping, I tried the techniques of inversing the homography and mapping from the destination to the source.

Reference Link to office hours video: https://www.youtube.com/watch?v=RK-AjSMEtcQ

5: Markers in Video

ps3-5-b-4

ps3-5-b-5

5: Markers in Video (cont.)

ps3-5-b-6

6: Video in Video

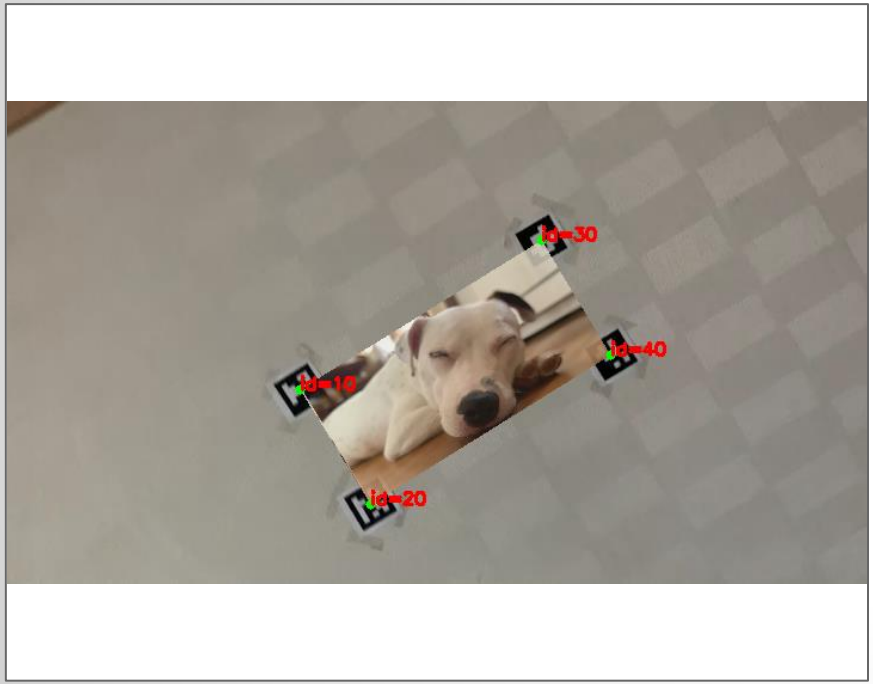
ps3-6-a-1

ps3-6-a-2

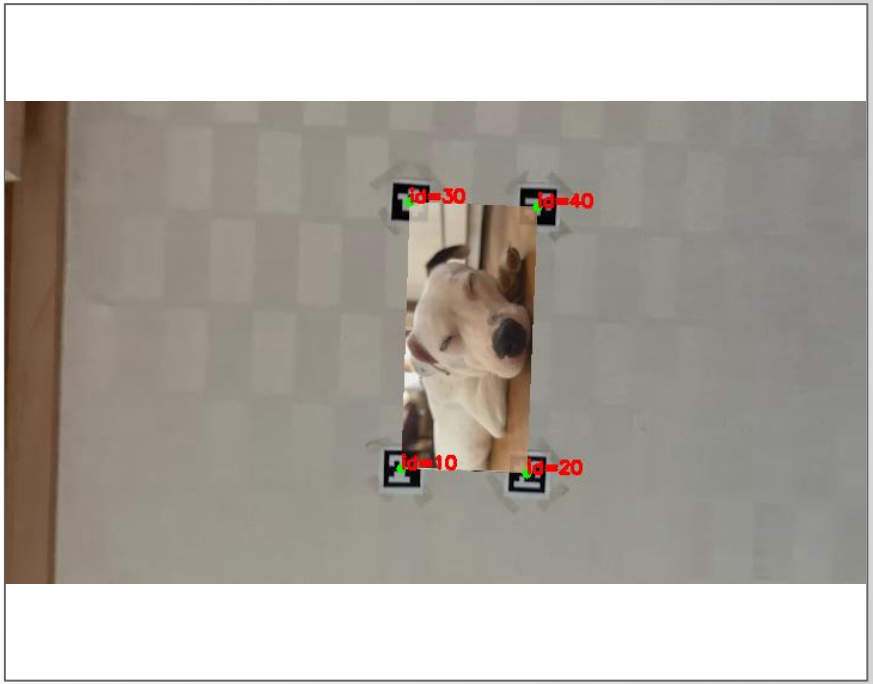
6: Video in Video (cont.)

ps3-6-a-3

7: ArUco Marker

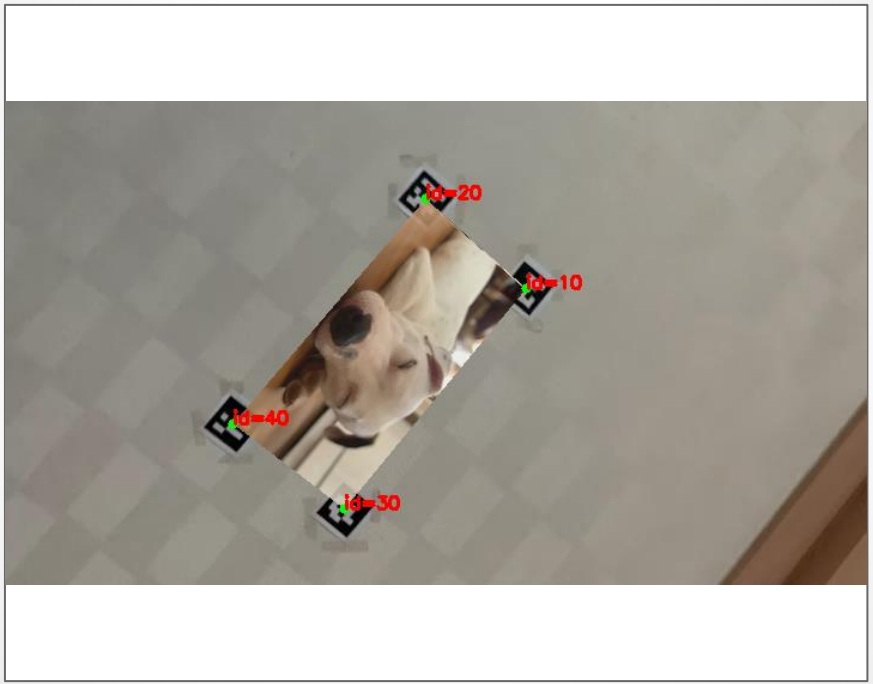


ps3-7-1



ps3-7-2

7: ArUco Marker (cont.)



ps3-7-3

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