**Pattern Match Study Procedure**

**General\*:**

1. Take multiple pictures of the area to pattern match.
2. Use Images imported from PIL in python to crop the templates.
3. Use LabVIEW’s pattern match function to pattern match all these images.
4. Use python to make a scatterplot of template length vs. efficiency, time, standard deviation, mean, etc.

\*The “general” versions of these programs do not exist, refer to the programs used to complete this study on the Fiducial Marks to write programs that suit your needs.

**For Fiducial Marks:**

1. Take pictures of each corner (in order or C, B, A, D)
   1. Find the corner locations with ContinuousCameraStageV2.vi.
   2. Use VisuallyInspectPositions.vi to take pictures of each corner (as many as desired).
2. Use python to cut the templates:

from PIL import Image

count = 1

img = Image.open("LargestImage.png")

interval = 4

w, l = img.size

while l - interval\*count > 0:

to\_crop = count\*2

img.crop((0, to\_crop, w, l-to\_crop)

).save("./G\_bottom\_74x" + str(l-interval\*count) + ".png")

count += 1

print("done")

* 1. Start from the largest image and decide the interval (pixel size difference between each image). This will write templates of varying length.

1. Run these images through PatternMatch.vi. The results are in the folder where the corner images folder is.
2. Run these files through TemplateSizeAnalysis3.py. Enter the appropriate files in the driver code, specify the Fiducial mark and whether the template varies in length or width.