CS-663 Assignment-1 Report

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1 Question-1

1.1 For 0.25 * 0.25 pixel size

We want to align an image with 0.5* 0.5 pixel size to an image having 0.25*0.25 pixel size. For an image of same dimentions if image1 has x rows and y columns then image2 has **2x rows and 2y columns**.
Assume we want to align two identical images then also a **scaling factor of 2 in both x and y direction** is required because of difference in no. of pixels which we don't find generally. So this is needed to be **applied in addition to our general motion model**.
Since the question asks for **less complex models** I think translation + rotation will be a good enough model.
So our final model will have **translation + rotation +scaling in both directions**.

$\implies$ Affine matrix will be $\begin{pmatrix} 2\cos\theta & -2\sin\theta & t_x \\ 2\sin\theta & 2\cos\theta & t_y \\ 0 & 0 & 1 \end{pmatrix}$

1.2 For 0.25 * 0.5 pixel size

We want to align an image with 0.5* 0.5 pixel size to an image having 0.25*0.5 pixel size. For an image of same dimentions if image1 has x rows and y columns then image2 has **2x rows and y columns**.
Assume we want to align two identical images then also a **scaling factor of 2 in x direction** is required because of difference in no. of pixels which we don't find generally. So this is needed to be **applied in addition to our general motion model**.
Since the question asks for **less complex models** I think translation + rotation will be a good enough model.
So our final model will have **translation + rotation +scaling in x direction**.

$\implies$ Affine matrix will be $\begin{pmatrix} 2\cos\theta & -2\sin\theta & t_x \\ \sin\theta & \cos\theta & t_y \\ 0 & 0 & 1 \end{pmatrix}$