Re: Affine Transform

Source: http://sci.tech−archive.net/Archive/sci.image.processing/2006−08/msg00098.html

- *From*: "priti" <priti.gem@xxxxxxxxx>
- *Date*: 31 Jul 2006 19:47:56 −0700

Hi,

Thanks for the info. It was quite useful.The thing is i dont know the control points exactly. I can manually choose the control points and try doing affine transform on the image but i dont think that is going to work out. Is there any algorithm that selects the control point automatically and does the affine transform. And moroever i m not dealing with just one or two images, i m dealing with a hyperspectral image cube and it has to real time. I did get the formulae for implementing the affine transform and did implement it but i m afraid it definitely needs either control points or the rotational and translational information to be taken into account. If you know of any algorithm that discusses about the automatic selection of control points kindly let me know
jg.campbell.ng@xxxxxxxxx wrote:

> priti wrote:
>
> > Hey Everyone,
> >
> > I have some images that are rotated and translated with respect to each other and i dont know the rotation or the translational factor and i need to align them so that each the corresponding pixel at each set of co−ordinates
>
> You have control points, i.e. points for which you know the coordinates in both frames?
>
> > represent the same structure. From Literature i learnt that Affine transform is used for rotational and translational alignment shortly called rigid body transformation/registration.
>
> Rotation combined with translation = rigid body transformation.
>
> Affine allows more, notably scaling. Shear? Not sure. But, yes, rigid body transformation is an affine transformation.

> I m
> not very sure as to how to form the affine transform matrix for implementing the correction. I tried the regular "affine transform" registration in MATLAB but that doesnt seem to work so well.
>
> If anyone has actually formed an affine transform matrix to perform this kind of an operation on the images it would be helpful to know as to how to form that matrix for correcting the rotational and translational misalignment.

I don't know the MATLAB function to which you refer. Depends on how you estimated the parameters; unless you have angle and the two translations (three parameters) from some other source, then you must estimate them from control points. I can post the formulae, but I have little soubt that you can find appropriate code on the web −−− but I guess the routine mentioned will work if use properly. Shapiro and Stockman, Computer Vision, Prentice Hall, 2001 is one book that will give you the formulae.

Strictly, you need just two control points which yield four equations in three unknowns. Normally, however, when there are measurement errors, more than two control points are needed −−− leading to overdetermined system of equations and requiring use of a pseudo−inverse of a matrix.

Best regards,

Jon C.

.