
Subject: find rotation between two images
Posted by [tbeetz](#) on Wed, 01 Sep 2004 21:54:57 GMT
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i have several images where i would like to find the rotation and shift compared to a reference image. i use an alignment routine to seperate the shifting part. however, there is still the remaining problem of image rotation. is there a routine available? thanks!

Subject: Re: find rotation between two images
Posted by [R.G. Stockwell](#) on Thu, 02 Sep 2004 01:01:22 GMT
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"Tobi" <tbeetz@yahoo.com> wrote in message
news:7f0cc27.0409011354.45cce42f@posting.google.com...
> i have several images where i would like to find the rotation and
> shift compared to a reference image. i use an alignment routine to
> seperate the shifting part. however, there is still the remaining
> problem of image rotation. is there a routine available? thanks!

Cool problem! Ignoring scale (zoom) problems and assuming the shift of the center of rotation is in the middle (since you did the shift already), to find a rotation between images I'd

- 1) clip the corners (since they presumably will not show up in the rotated image) leaving a circular image.
- 2) find the edges using a canned routine (with a high threshold) for both
- 3) then calculate the Radon transform of the edge image for both.
- 4) read off the angle of particular lines for both, and subtract the two

Cheers,
bob

Subject: Re: find rotation between two images
Posted by [helaha](#) on Fri, 10 Sep 2004 09:02:12 GMT
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tbeetz@yahoo.com (Tobi) wrote in message
news:<7f0cc27.0409011354.45cce42f@posting.google.com>...
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I have developed an image processing tool IQM and there is an alignment feature "Align stack". The first image of an image stack is

centered in the middle of the image (simply by shifting the centroid). The subsequent images are aligned by three steps of shifts and rotations (each step consists of up to 100 shifts and 100 rotations). For each step an actual shift and rotation, which minimises the statistical error is chosen. For large images, the calculation times are therefore quite long.

If you are interested, look at

<http://www.uni-graz.at/people/ahammer/IQM/index.htm>

Regards,
Helmut Ahammer

Subject: Re: find rotation between two images
Posted by [ronn](#) on Fri, 10 Sep 2004 15:33:29 GMT
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tbeetz@yahoo.com (Tobi) wrote in message
news:<7f0cc27.0409011354.45cce42f@posting.google.com>...
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Hi Tobi,

Sorry that I didn't notice this post earlier. Hongjie Xie has some excellent routines to do exactly what you want.

Go to this site

<http://www.iamg.org/CGEditor/cg2003.htm>

and do a search for this title

An IDL/ENVI implementation of the FFT-based algorithm for automatic image registration

It will bring you to another link with source code and data files.

Dr. Xie's web site is at

<http://www.utsa.edu/eps/programs/EnvSci/hjCV.htm>

-Ronn Kling

Subject: Re: find rotation between two images
Posted by [dcw_yip](#) on Fri, 10 Sep 2004 21:35:55 GMT
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Do some simple feature extraction and then do a least-squares fit. Look up the paper in IEEE transactions entitled "Least-Squares Fitting of Two 3-D Point Sets" by Arun, Huang and Blostein. I wrote some code to do basically what you are describing. Their paper is very clear and took me about an hour or two to code up. You won't get exact rotation angles. They'll be within a half a degree or so.

There are also some enhancements to their algorithm to give you scaling, shearing, etc, etc if you need that.

David

tbeetz@yahoo.com (Tobi) wrote in message
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Subject: Re: find rotation between two images
Posted by [jeyadev](#) on Mon, 13 Sep 2004 20:17:04 GMT
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> tbeetz@yahoo.com (Tobi) wrote in message
news:<7f0cc27.0409011354.45cce42f@posting.google.com>...
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Find supernovae!

Check out <http://spiff.rit.edu/match>

It works like a charm if you can extract "points" from your image.

--

Surendar Jeyadev jeyadev1@wrc.xerox.com

Remove 1 for email address
