Subject: Mapping and registering images with IDL
Posted by steve on Sat, 12 Dec 1992 08:02:35 GMT
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We have recently obtained a free 30 day trial version of IMSL/IDL, and are trying to see if it will be useful for our image processing requirements. One of the things that we are trying to do is to register multiple images that were taken from different camera angles (but from the same viewpoint), into a 360 degree panorama. We are interested in texture mapping them onto a cylinder or onto a sphere, or just simply doing a 3-D coordinate transformation. While IDL supports polywarp, what we want is really an exact perspective resampling and not a bilinear approximation. We see that tv claims to support 3D coordinate transformations, which would allow us to tv an image and then use tvrd to get it back again, if we could display it obliquely so that it would go to an arbitrary quadrilateral. tvscl,dist(100),/T3D appears to just display the image in a rectangular manner. How does one display it as an arbitrary quadrilateral. The file show3.pro does sort of what we want but it calls polywarp which is not a true perspective transformation (e.g. polywarp does not map straight lines to straight lines -- there is a little curvature when there is large perspective involoved).

If anyone has used IDL to map an image onto a plane of arbitrary orientation or onto an arbitrary conic, please let me know so we can compare our implementations. We've implemented these mappings in IDL, in a crude sort of way, but it seems that IDL would support them internally, as it does have the capability (e.g. shaded surface plots with the shading set to the image bitmap shows that it can nicely resample and texture-map images).

Similarly, if anyone's implemented a bicubic or biharmonic spline that will work over arbitrary sampling (not just the tensor splines like bsinterp) I would also be interested in hearing about it.

Lastly, given our applications, would anyone be able to suggest which of {IMSL/IDL, RSI/IDL, PV-Wave} would be most suitable?

Thanks
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