1 Program 3drotate

1.1 Purpose

Rotates and/or translates all bricks from an AFNI dataset.

1.2 Usage

3drotate [options] dataset
'dataset' may contain a sub-brick selector list.

1.3 Options

-prefix fname
Sets the output dataset prefix name to be 'fname'

-verbose
Prints out progress reports

At most one of these shift options can be used:
-ashift dx dy dz = Shifts the dataset 'dx' mm in the x-direction, etc., AFTER rotation.
-bshift dx dy dz = Shifts the dataset 'dx' mm in the x-direction, etc., BEFORE rotation.

The shift distances by default are along the (x,y,z) axes of the dataset storage directions (see the output of '3dinfo dataset'). To specify them anatomically, you can suffix a distance with one of the symbols 'R', 'L', 'A', 'P', 'I', and 'S', meaning 'Right', 'Left', 'Anterior', 'Posterior', 'Inferior', and 'Superior', respectively.

-rotate th1 th2 th3
Specifies the 3D rotation to be composed of 3 planar rotations:
1) 'th1' degrees about the 1st axis, followed by
2) 'th2' degrees about the (rotated) 2nd axis, followed by
3) 'th3' degrees about the (doubly rotated) 3rd axis.

Which axes are used for these rotations is specified by placing one of the symbols 'R', 'L', 'A', 'P', 'I', and 'S' at the end of each angle (e.g., '10.7A'). These symbols denote rotation about the 'Right-to-Left', 'Left-to-Right', 'Anterior-to-Posterior', 'Posterior-to-Anterior', 'Inferior-to-Superior', and 'Superior-to-Inferior' axes, respectively. A positive rotation is defined by the right-hand rule.

Algorithm: The rotation+shift is decomposed into 4 1D shearing operations (the 3D generalization of Paeth's algorithm). The interpolation (i.e., resampling) method used for these shears can be controlled by the following options:

-Fourier	=	Use a Fourier method (the default: most accurate; slowest).
-linear	=	Use linear (1st order polynomial) interpolation (least accurate).
-cubic	=	Use the cubic (3rd order) Lagrange polynomial method.
-quintic	=	Use the quintic (5th order) Lagrange polynomial method.
-heptic	=	Use the heptic (7th order) Lagrange polynomial method.

1.4 Example

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3drotate -prefix Elvis -bshift 10S 0 0 -rotate 30R 0 0 Sinatra+orig
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This will shift the input 10 mm in the superior direction, followed by a 30 degree rotation about the Right-to-Left axis (i.e., nod the head forward).