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Re: DICOM Geometry information for double oblique slices

Sent by Vinay.Pai on March 07, 2004 at 05:42:13:

In Reply to: [DICOM Geometry information for double oblique slices](#) sent by martin.buechert on March 03, 2004 at 16:20:48:

Hi,

I have uploaded a minidoc (slcpas.pdf) in General, which might be of use to you in computing the values better. It shows how the phase, read and slice directions are computed.

Vinay

: I try to understand the 'imagepositionpatient' and 'imageorientationpatient' information of a double oblique MR-image acquired with a Sonata.

: The measurement parameter were 'S>C 16 degree > T 15 degree'.

: In the dicom header the imagepositionpatient is -4.02 -154.84 144.88 and the imageorientationpatient 0.275 0.961 0 -0.248 0.071 -0.9659.

: I was assuming that I can 'simulate' the result by starting with a sagittal slice [imagepositionpatient 0 -150 -150][imageorientationpatient 0 1 0 0 0 -1] and applying a 16 degree rotation towards the coronar slice (=around tra axis = z axis).

: The second step would be to apply a 15 degree rotation towards the transversal slice (=around cor axis = y axis).

: Trying so, I get [41.3456 -144.1893 150.0000] after the first roation and [-1.1139 -144.1893 155.5899] after the 2nd rotation.

: Comparing these values with measurement data I didn't found consistency.

: Measured data sets have the following values in their dicom header [-41.3456 -144.1893 150.0000] for 'S>C 16 degree' (note the minus sign!) and [-4.02 -154.89 144.88] for 'S>C 16 degree > T 15 degree'.

: All data are located isocenter without any rotation and have the same FOV.

: Obviously there is more (completely different after the 2nd step) or less ('only' a sign error after the first step) no match with my calculation.

: Does anybody have an idea whats going wrong or were I made a mistake in my assumptions or calculations?

: If I acquire pure sagittal, coronar or transversal slices the dicom

: header reads like this imagepositionpatient [0 -150 -150] for sag, [-150 0 150] for cor, [-150 -150 0] for tra and imageorientationpatient [0 1 0 0 -1] for sag, [1 0 0 0 -1] for cor, [1 0 0 0 1 0] for tra.

: Thats why I used [imagepositionpatient 0 -150 -150] and [imageorientationpatient 0 1 0 0 0 -1] as a starting point.

: For the rotations I used the standard rotation matrices

: $R_x = \begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos(a) & -\sin(a) \\ 0 & \sin(a) & \cos(a) \end{bmatrix}$;

: $R_y = \begin{bmatrix} \cos(b) & 0 & \sin(b) \\ 0 & 1 & 0 \\ -\sin(b) & 0 & \cos(b) \end{bmatrix}$;

: and $R_z = \begin{bmatrix} \cos(g) & -\sin(g) & 0 \\ \sin(g) & \cos(g) & 0 \\ 0 & 0 & 1 \end{bmatrix}$;

: Thanks for any help martin

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Replies:

- [Re: DICOM Geometry information for double oblique slices](#) **Roddy.McColl**
04/30/05 (0)

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Re: DICOM Geometry information for double oblique slice

Comments:

: Hi,

: I have uploaded a minidoc (slcpos.pdf) in General, which might be of use to you in computing the values better. It shows how the phase, read and slice directions are computed.

: Vinay

:

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