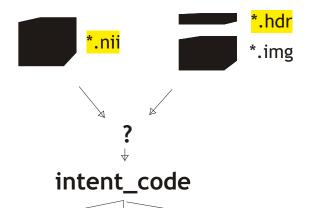
THE NIFTI DATA FORMAT



NIFTI1 can store data with different meanings. Imaging data, statistical values and other data (any vector, matrix, label set or mesh). can be saved in a nifti1 *.nii or *.hdr/*.img file. Once a data intent is chosen, the use of the nifti1 format is unambigious since the use of particular fields for a certain intent is predetermined.

DATASET

NIFTI INTENT NONE: 0

STATISTICS

NIFTI INTENT CORREL: 2 NIFTI INTENT TTEST:3 NIFTI INTENT FTEST: 4 NIFTI INTENT ZSCORE: 5 NIFTI INTENT CHISQ: 6 NIFTI INTENT BETA: 7 NIFTI INTENT BINOM: 8 NIFTI INTENT GAMMA: 9 NIFTI INTENT POISSON: 10 NIFTI INTENT NORMAL: 11 NIFTI INTENT FTEST NONC: 12 NIFTI INTENT CHISQ NONC: 13 NIFTI INTENT LOGISTIC: 14 NIFTI INTENT LAPLACE: 15 NIFTI INTENT UNIFORM: 16 NIFTI INTENT TIEST NONC: 17 NIFTI INTENT WEIBULL: 18 NIFTI INTENT CHI: 19 NIFTI INTENT INVGAUSS: 20 NIFTI INTENT EXTVAL: 21 NIFTI INTENT PVAL: 22 NIFTI INTENT LOGPVAL:: 23 NIFTI INTENT LOG10PVAL: 24

OTHER

NIFTI_INTENT_ESTIMATE: 1001
NIFTI_INTENT_LABEL: 1002
NIFTI_INTENT_NEURONAME: 1003
NIFTI_INTENT_GENMATRIX: 1004
NIFTI_INTENT_SYMMATRIX: 1005
NIFTI_INTENT_DISPVECT: 1006
NIFTI_INTENT_DISPVECT: 1007
NIFTI_INTENT_VECTOR: 1007
NIFTI_INTENT_POINTSET: 1008
NIFTI_INTENT_TRIANGLE: 1009
NIFTI_INTENT_QUATERNION: 1010
NIFTI_INTENT_DIMLESS: 1011

To determine the position of the voxel in the dataset, method 1 is used (translation). Methods 2 and 3 serve also for reconstructing rigid body and affine transformations so that the positions of the voxels withinthe dataset in a stereotactic space can be determined.

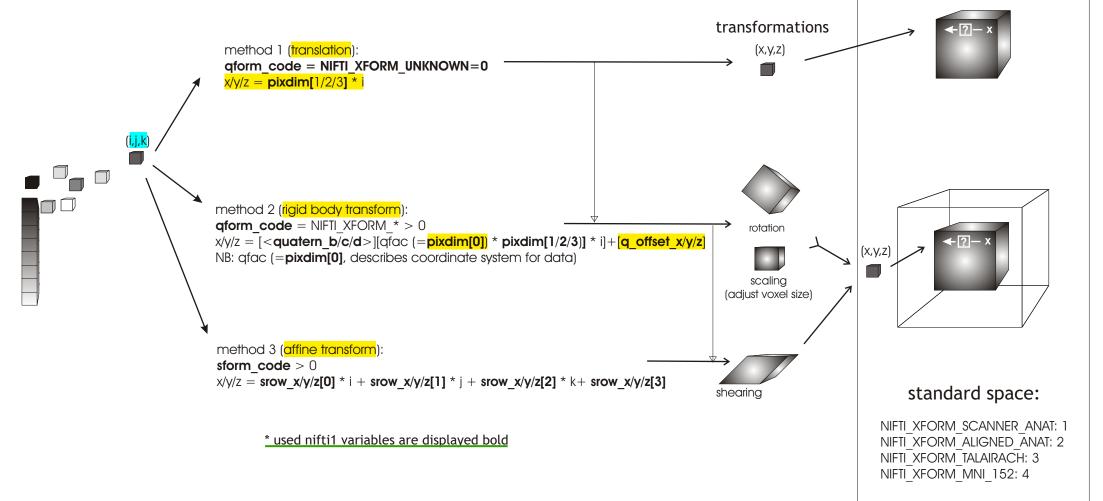
NIFTI_INTENT: DATASETS

COORDINATE SYSTEM

arbitrary space:

NIFTI XFORM UNKNOWN: 0

Locating position of voxel in dataset: how to use the nifti1 variables for datasets



Nifti1 can also be used to store values drawn from a given distribution. For this purpose, many intent_types are dedicated to describe statistical tests Univariate and multivariate tests can be stored, including the used parameters. In nifti1, it is possible to save more than one values per voxel (even a matrix per voxel).

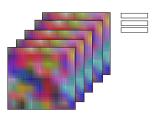
NIFTI INTENT: STATISTICS

How to use the nifti1 variables for statistical values



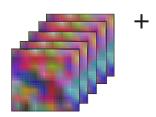
dim[3] = 1: single slice

dim[5] = 1: statistical parameters stored in intent p1/2/3 (parameters applied to whole dataset)



dim[3] > 1: several slices

dim[5] = 1: statistical parameters stored in intent_p1/2/3 (parameters applied to whole dataset)



PO SO O DE SOM AND AMERICAN PARE OF SOME OF SO

dim[5] > 1: voxel-wise statistical parameters stored in data planes after stat value plane, for example the degrees of freedom

NIFTI INTENT: OTHER

How to use the nifti1 variables for other intents

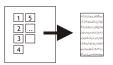


NIFTI INTENT ESTIMATE: 1001 parameter for estimate in intent_name



NIFTI INTENT DISPVECT: 1006

parameter at each voxel is displacement vector dim[5] = dimensionality of displacement (e.g. 2 = in-plane, 3 = spatial)



NIFTI INTENT LABEL: 1002

parameter at each voxel is index to label defined in aux file



NIFTI INTENT VECTOR: 1007

parameter at each voxel is vector



NIFTI INTENT NEURONAMES: 1003

parameter at each voxel is index to label in NeuroNames label set



NIFTI INTENT POINTSET: 1008

value at each voxel is spatial coordinate (vertices/nodes of surface mesh)

dim[0] = 5

dim[1] = nr of points

dim[2/3/4] = 1



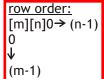
NIFTI INTENT GENMATRIX: 1004

 $[M \times N]$

parameter at each voxel is matrix

dim[0] = 5

dim[5] > 1: M * N intent_p1: M (float) intent_p2: N (float)



NIFTI INTENT TRIANGLE: 1009

value at each voxel is triple of indices (forming triangle)

from a pointset

dim[0] = 5

dim[1] = nr of triangles

dim[2/3/4] = 1

dim[5] = dimentionality of space

intent name can describe the objects where points

come from ("pial", "gray/white", "EEG" etc)



parameter at each voxel is symmetrical matrix

row order: dim[0] = 5[0][0] dim[5] > 1: N * (N+1)/2

[1][0] [1][1] intent_p1: N (float)) [2][0] [2][1] [2][2] $[4 \times 4]$

NIFTI INTENT QUATERNION: 1010

vector value at each voxel isquaternion

dim[0] = 5dim[5] = 4

NIFTI INTENT DIMLESS: 1011

dimensionless value

