Ver. :2020.08.27 MK possible results to place the manuscript,

An update : 2020.08.27

Test set:

```
****************************** TEST ******************************
    Dice:       max=0.9871, min=0.8545, | mean=0.9778, std=0.0131
    Jaccard:    max=0.9745, min=0.7460, | mean=0.9569, std=0.024
    Hausdorff   max=47.3709, min=2.2361, | mean=5.6711, std=4.7215
**********************************************************************

******************************** IXI ********************************
    Dice:       max=0.9856, min=0.8838, | mean=0.9791, std=0.0076
    Jaccard:    max=0.9715, min=0.7918, | mean=0.9591, std=0.0139
    Hausdorff:  max=52.8583, min=2.0000, | mean=5.7811, std=5.4826
**********************************************************************
```

Voxel spacing:

```
**************************
*** ixi (exams: 581)   ***
**************************
       cnt       dimension
  0  576  [1.2, 0.9, 0.9]
  1    5    [1.2, 1.0, 1.0]


****************************
*** adni (exams: 7921)   ***
****************************
        cnt       dimension
  2   3977  [1.2, 1.0, 1.0]
  0   2208  [1.2, 0.9, 0.9]
  4    520  [1.2, 1.2, 1.2]
  5    407  [1.2, 1.2, 1.3]
  6    402  [1.2, 1.3, 1.2]
  7    212  [1.2, 1.3, 1.3]
  3     99   [1.2, 1.1, 1.1]
  1     84   [1.2, 0.9, 1.0]
  9      9   [1.2, 1.4, 1.4]
  8      1   [1.2, 1.3, 1.4]
  10     1   [1.3, 0.9, 0.9]
  11     1   [1.4, 1.2, 1.2]


**************************
*** aibl (exams: 726)   ***
**************************
       cnt       dimension
  0  726  [1.2, 1.0, 1.0]


**************************
*** ppmi (exams: 752)   ***
**************************
       cnt       dimension
  0  749  [1.0, 1.0, 1.0]
  1    3    [1.2, 1.1, 1.1]


****************************
*** slim (exams: 1036)   ***
****************************
        cnt       dimension
  0  1036  [1.0, 1.0, 1.0]
```

```
**************************
*** sald (exams: 493)   ***
**************************
       cnt        dimension
0  493  [1.0, 1.0, 1.0]
```

```
************************
*** cc (exams: 359)   ***
************************
       cnt        dimension
1  242  [1.0, 1.0, 1.0]
2   60  [1.3, 1.0, 1.0]
0   57  [1.0, 0.9, 0.9]
```

Image sizes:

```
**************************
*** ixi (exams: 581)   ***
**************************
       cnt        dimension
4  498  [150, 256, 181]
2   74   [146, 256, 181]
3    5   [150, 256, 174]
0    2   [130, 256, 181]
1    2   [140, 256, 181]
```

```
****************************
*** adni (exams: 7921)   ***
****************************
         cnt        dimension
56  2127  [176, 240, 170]
17  1028  [160, 192, 136]
78  1005  [196, 256, 167]
37   752   [170, 256, 170]
33   727   [166, 256, 180]
       ..   ...            ...
47     1  [170, 288, 184]
49     1  [172, 256, 167]
50     1  [176, 192, 136]
51     1  [176, 192, 137]
40     1  [170, 256, 173]

[80 rows x 2 columns]
```

```
**************************
*** aibl (exams: 726)   ***
**************************
       cnt        dimension
0  726  [160, 240, 170]
```

****
*** ppmi (exams: 752) ***
****

	cnt	dimension
4	600	[176, 240, 170]
6	93	[176, 256, 170]
8	23	[192, 240, 170]
7	17	[176, 256, 174]
1	4	[160, 240, 170]
2	4	[175, 240, 170]
10	4	[256, 240, 170]
3	3	[176, 240, 161]
9	2	[192, 256, 170]
0	1	[144, 240, 170]
5	1	[176, 248, 170]

****
*** slim (exams: 1036) ***
****

	cnt	dimension
433	545	[176, 256, 170]
434	13	[176, 256, 174]
402	3	[176, 184, 170]
396	3	[175, 200, 170]
412	3	[176, 197, 170]
..	...	...
146	1	[164, 182, 167]
145	1	[164, 180, 131]
144	1	[164, 179, 170]
143	1	[164, 175, 161]
217	1	[166, 199, 170]

[435 rows x 2 columns]

****
*** sald (exams: 493) ***
****

	cnt	dimension
0	493	[176, 256, 170]

****
*** cc (exams: 359) ***
****

	cnt	dimension
27	63	[192, 256, 170]
31	60	[224, 256, 170]
24	55	[180, 240, 170]
36	52	[256, 196, 170]
29	47	[200, 256, 170]
1	32	[150, 288, 191]
23	5	[180, 224, 173]
8	4	[160, 288, 191]
20	3	[176, 256, 170]
5	3	[158, 288, 191]
19	2	[172, 256, 170]
16	2	[170, 288, 191]
34	2	[256, 186, 170]
9	2	[161, 288, 191]
15	2	[168, 288, 191]
30	1	[212, 256, 170]
35	1	[256, 192, 170]
32	1	[256, 168, 170]

33 1 [256, 174, 170]
28 1 [196, 256, 170]
37 1 [256, 200, 170]
38 1 [256, 204, 170]
26 1 [188, 256, 170]
25 1 [184, 256, 170]
0 1 [150, 288, 178]
22 1 [179, 288, 191]
21 1 [176, 288, 191]
18 1 [171, 288, 191]
17 1 [171, 256, 170]
14 1 [165, 288, 191]
13 1 [165, 288, 186]
12 1 [164, 288, 191]
11 1 [164, 256, 170]
10 1 [162, 288, 191]
7 1 [160, 288, 183]
6 1 [159, 288, 191]
4 1 [157, 288, 191]
3 1 [156, 288, 191]
2 1 [154, 288, 191]
39 1 [256, 208, 170]

An update : 2020.08.24

IXI_TEST

****

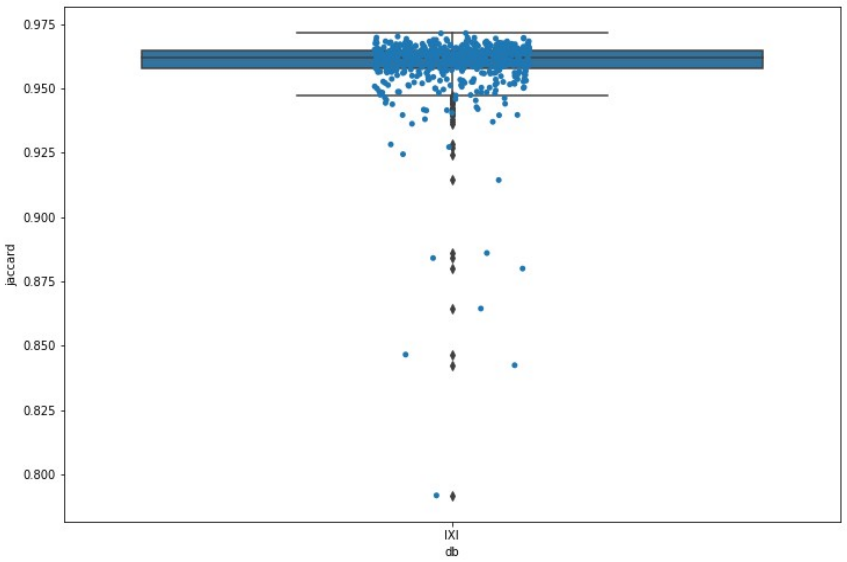
Dice: max=0.986, min=0.884, | mean=0.979, std=0.008

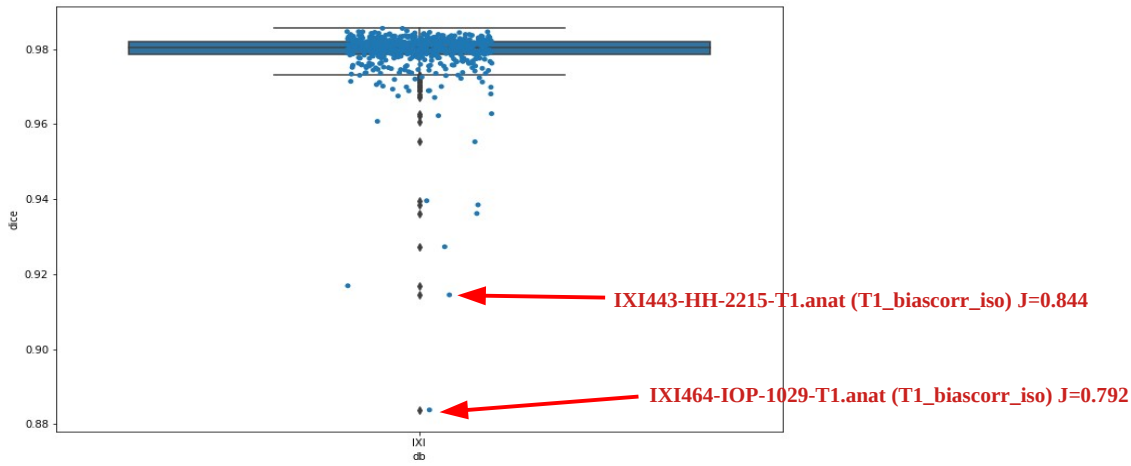
Jaccard: max=0.972, min=0.792, | mean=0.959, std=0.014

Haus.sm: max=548.036, min=249.983, | mean=311.723, std=27.756

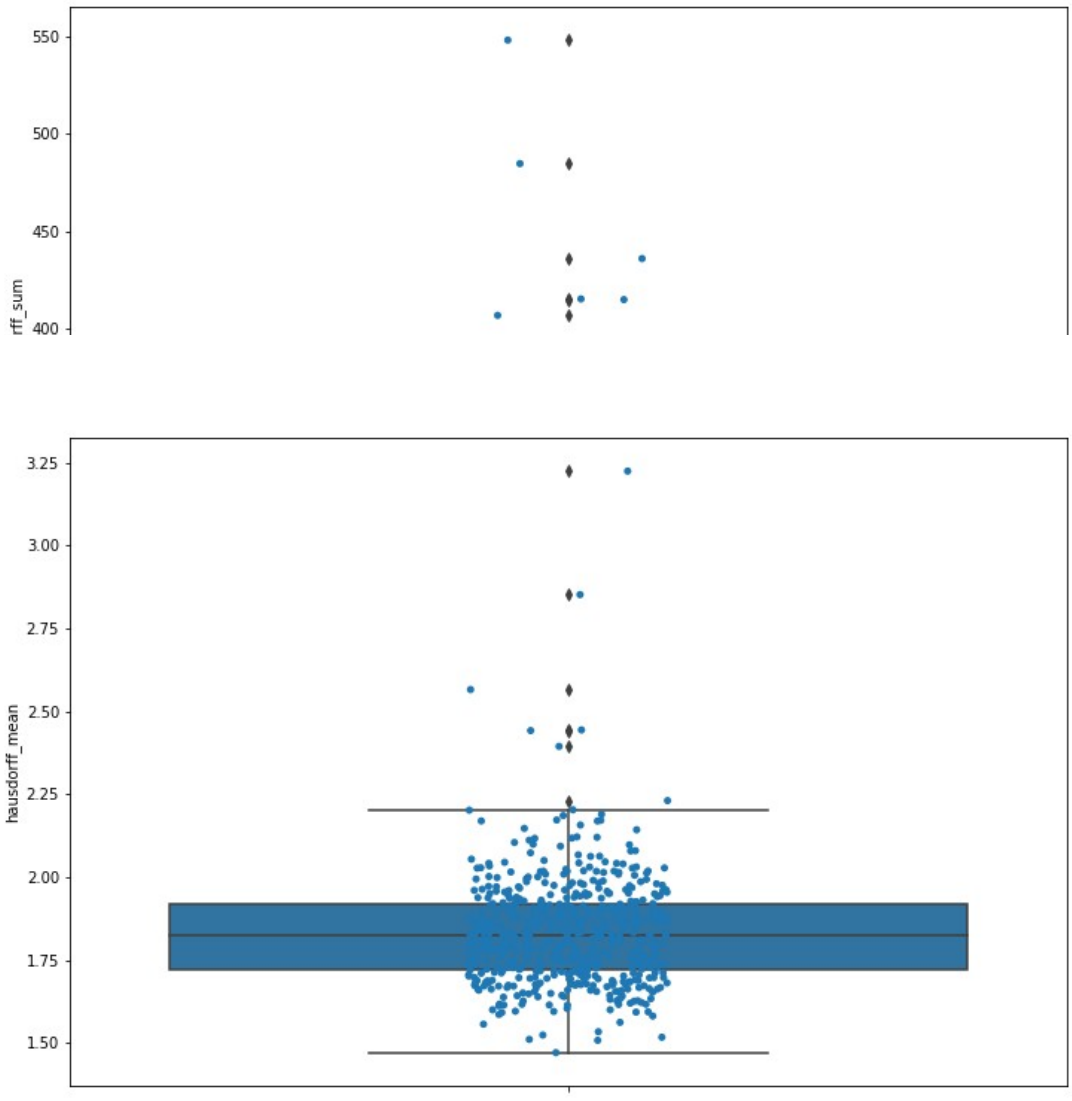
Haus.av: max=3.224, min=1.470, | mean=1.834, std=0.163

****





Identification of patient (examination) with the smallest dice/jaccard coefficient



TEST

********** **Dice** **********

	max,	min		mean,	std
GLOB.	0.987,	0.855,		0.978,	0.013
ADNI:	0.984,	0.855,		0.974,	0.017
AIBL:	0.984,	0.932,		0.981,	0.005
CC :	0.985,	0.936,		0.981,	0.009
PPMI:	0.984,	0.949,		0.981,	0.007
SALD:	0.987,	0.942,		0.979,	0.009
SLIM:	0.987,	0.968,		0.982,	0.003

********** **Jaccard** **********

	max,	min		mean,	std
GLOB.	0.974,	0.746,		0.957,	0.024
ADNI:	0.968,	0.746,		0.951,	0.030
AIBL:	0.969,	0.873,		0.963,	0.010
CC :	0.970,	0.879,		0.962,	0.016
PPMI:	0.969,	0.903,		0.962,	0.014
SALD:	0.974,	0.891,		0.959,	0.016
SLIM:	0.974,	0.937,		0.966,	0.006

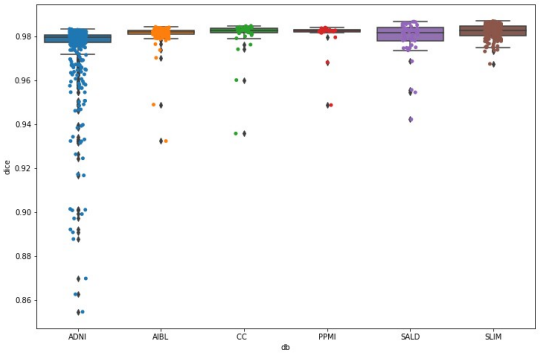
********** Hausdorff sum **********

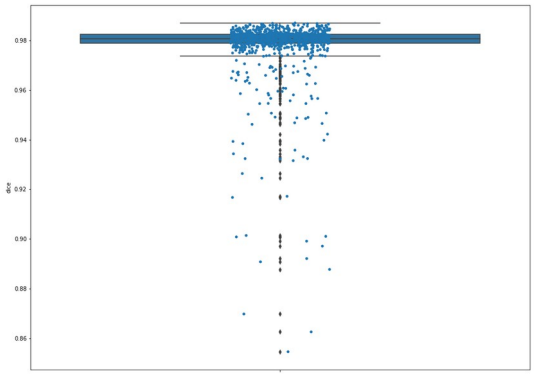
	max,	min		mean,	std
GLOB.	587.527,	218.005,		320.214,	44.789
ADNI:	587.527,	252.922,		333.036,	51.546
AIBL:	424.172,	234.168,		308.478,	26.099
CC :	390.534,	251.416,		298.810,	26.656
PPMI:	417.122,	274.011,		320.320,	35.508
SALD:	360.534,	218.005,		287.257,	28.581
SLIM:	382.096,	236.005,		308.899,	32.303

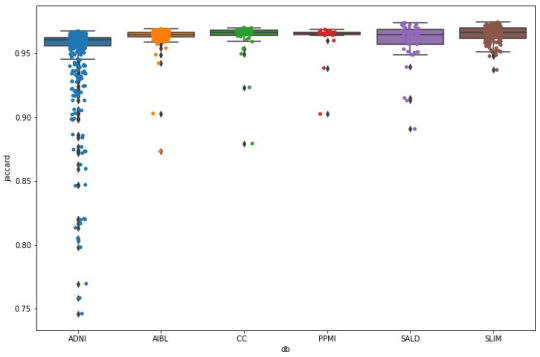
********** Hausdorff mean **********

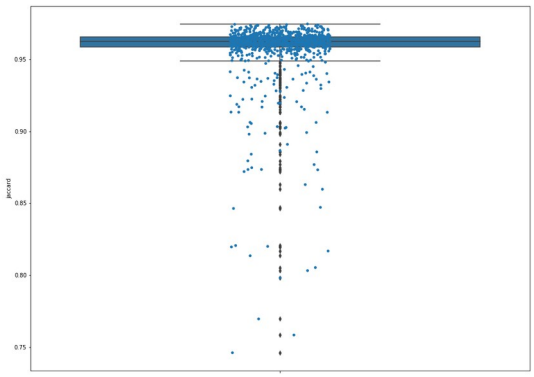
	max,	min		mean,	std
GLOB.	3.456,	1.282,		1.891,	0.269
ADNI:	3.456,	1.488,		1.959,	0.303
AIBL:	2.495,	1.377,		1.815,	0.154
CC :	2.297,	1.479,		1.758,	0.157
PPMI:	2.454,	1.612,		1.884,	0.209
SALD:	2.121,	1.282,		1.690,	0.168
SLIM:	2.470,	1.388,		1.854,	0.232

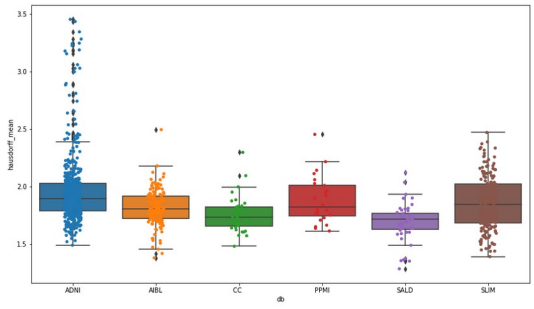
Top row: Dice, middle row: Jaccard

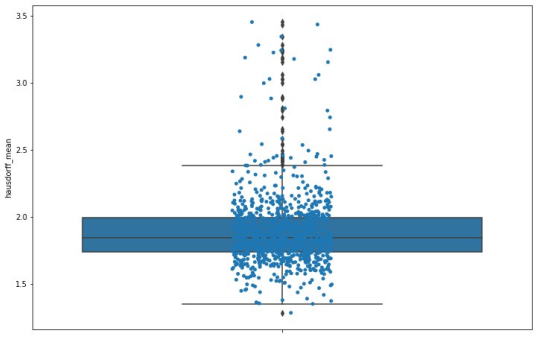


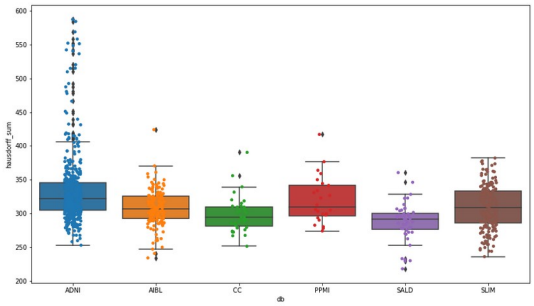


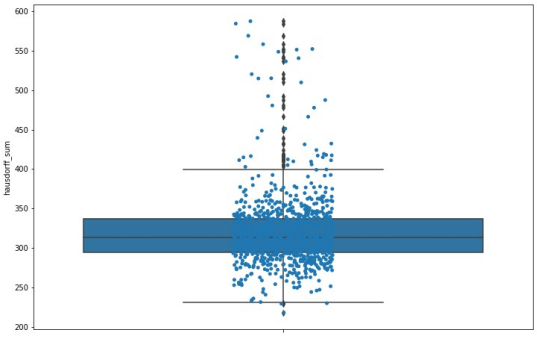






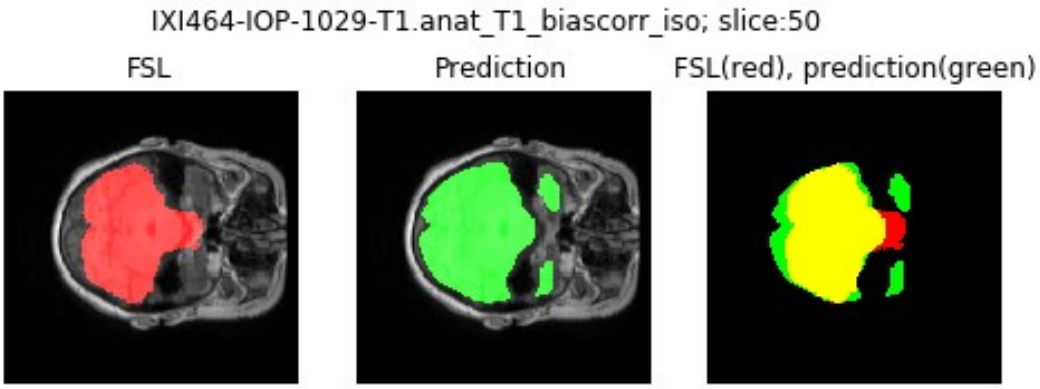


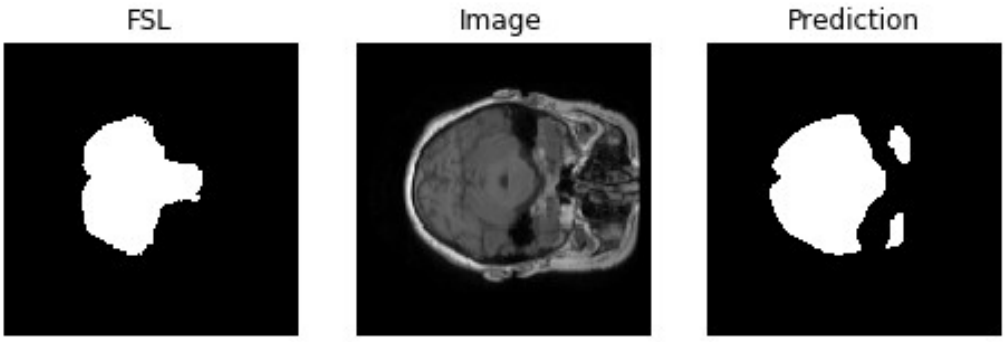




Visualization (matplotlib, ITK-Snap)

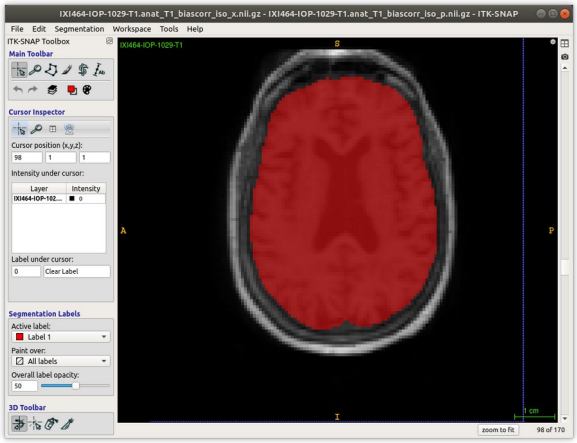
Image IXI464-IOP-1029-T1.anat (T1_biascorr_iso) J=0.792, with the lowest dice coef. value.



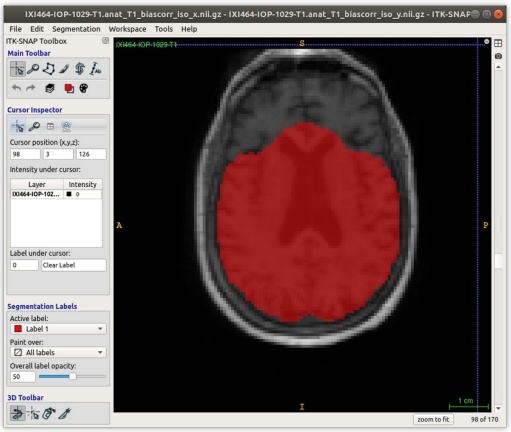


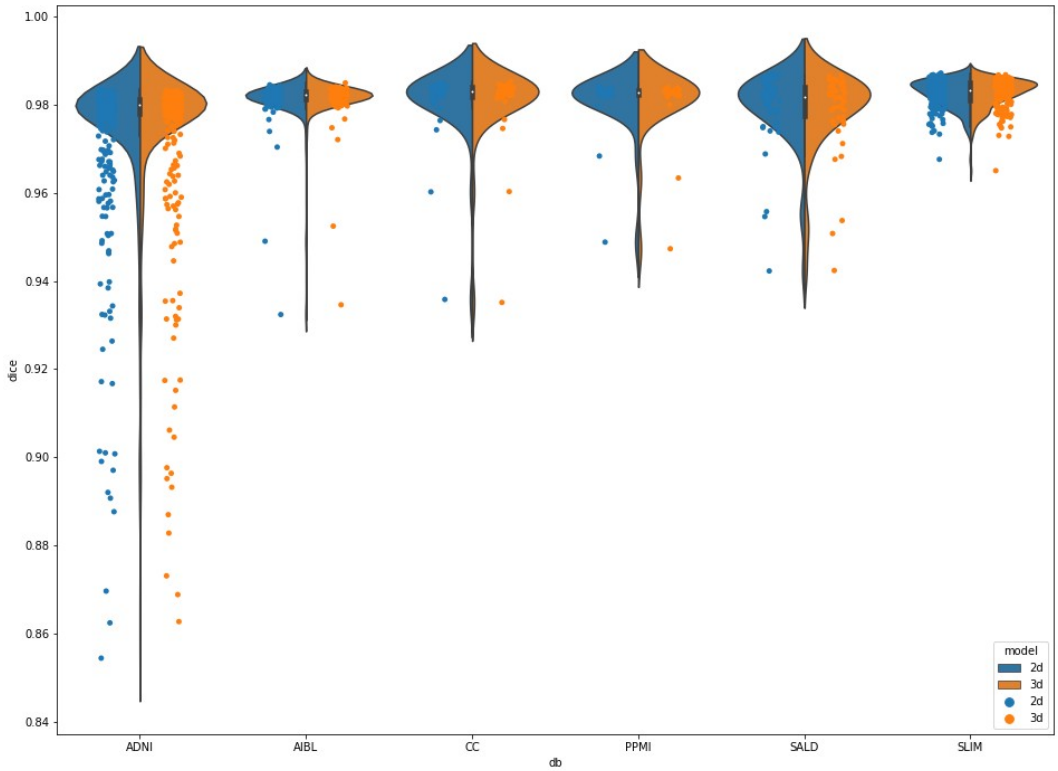
Save as nifti files
Image:I XI464-IOP-1029-T1.anat (T1_biascorr_iso) J=0.792

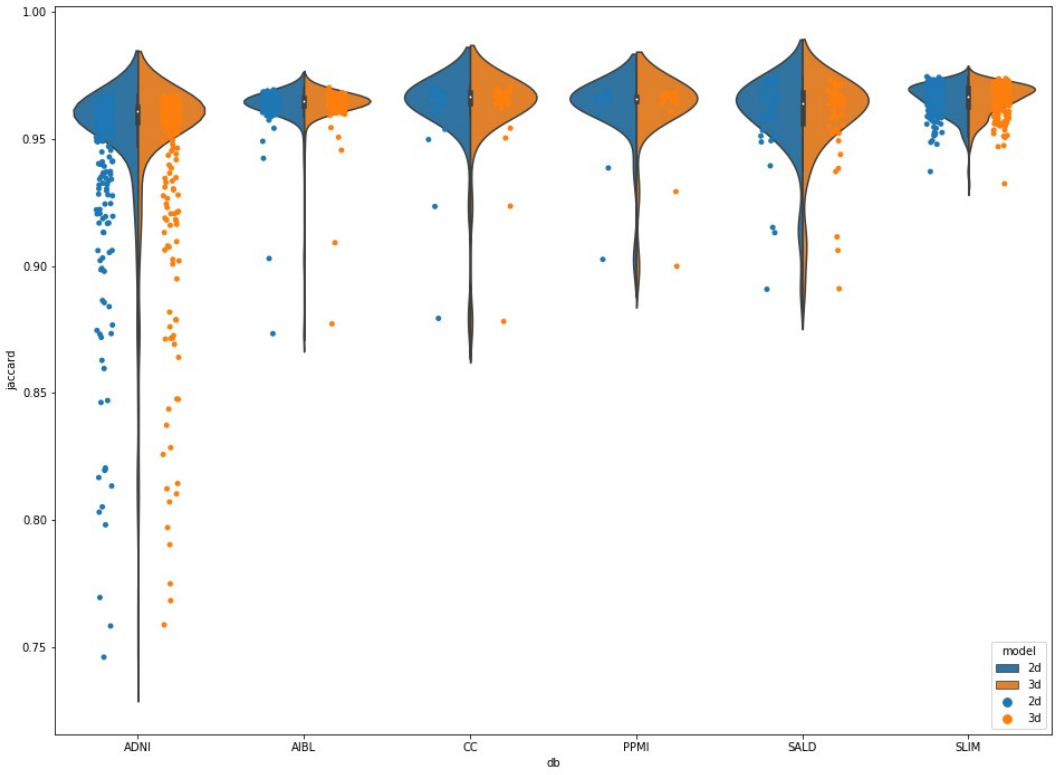
Prediction

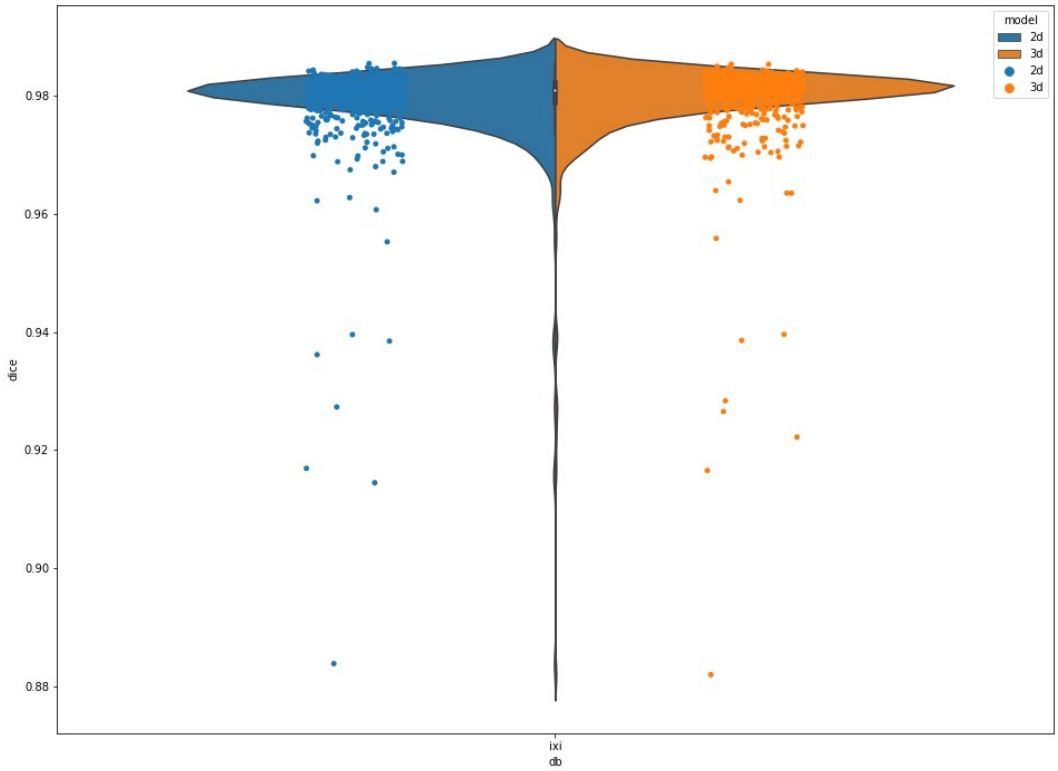


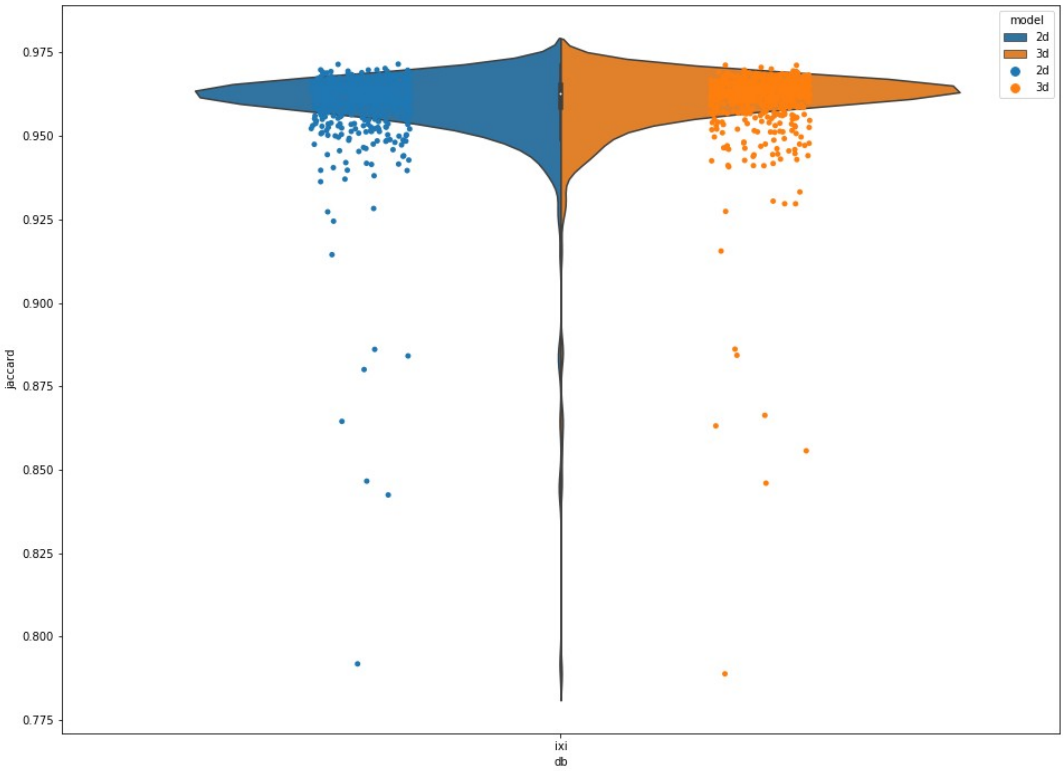
FSL output






1.00
0.95
0.90
0.85
0.80
0.75
jaccard
ADNI
AIBL
CC
PPMI
SALD
SLIM
db
model
2d
3d
2d
3d


model
2d
3d
2d
3d
0.98
0.96
0.94
0.92
0.90
0.88
dice
ixi
db


model
2d
3d
2d
3d
0.975
0.950
0.925
0.900
0.875
0.850
0.825
0.800
0.775
jaccard
ixi
db

Some characteristic of ISO images.

ADNI 3D isotropic images
*** Total number of ADNI images: 25935 ***
*** Number of unique shape values: 162 ***
*** Unique shape and its counts:
(211, 240, 170) 6381
(192, 240, 170) 3445
(235, 260, 170) 3015
(204, 256, 170) 2256
(200, 240, 170)   699
                 ...
(191, 239, 170)   3
(154, 240, 170)   3
(174, 240, 169)   3
(211, 240, 171)   3
(181, 239, 170)   3

AIBL 3D isotropic images
*** Total number of AIBL images: 2173 ***
*** Number of unique shape values: 1 ***
*** Unique shape and its counts:
(192, 240, 170) 2173

IXI 3D isotropic images
*** Total number of IXI images: 1743 ***
*** Number of unique shape values: 5 ***
*** Unique shape and its counts:
(180, 240, 170) 1494
(175, 240, 170)   222
(180, 250, 170)   15
(156, 240, 170)   6
(168, 240, 170)   6

PPMI 3D isotropic images
*** Total number of PPMI images: 2250 ***
*** Number of unique shape values: 11 ***
*** Unique shape and its counts:
(176, 240, 170) 1794
(176, 256, 170)   279
(192, 240, 170)   69
(176, 250, 170)   51
(256, 240, 170)   12
(160, 240, 170)   12
(175, 240, 170)   12
(211, 253, 170)   9
(192, 256, 170)   6
(144, 240, 170)   3
(176, 248, 170)   3

SALD 3D isotropic images
*** Total number of SALD images: 1472 ***
*** Number of unique shape values: 1 ***
*** Unique shape and its counts:
(176, 256, 170) 1472

SLIM 3D isotropic images
*** Total number of SLIM images: 1472 ***
*** Number of unique shape values: 1 ***
*** Unique shape and its counts:
(176, 256, 170) 1472