```
import pandas as pd
import os
from project.dataset import Dataset, VALDODataset
from project.preprocessing import z_score_normalization,
min_max_normalization, NiftiToTensorTransform, get_transform
# from project.preprocessing import z_score_normalization,
min_max_normalization
# from project.training import split_train_val_datasets
from project.utils import collate_fn, plot_all_slices,
plot_all_slices_from_array, collatev2, compute_statistics
from torch.utils.data import DataLoader
import torch
from project.model import VisionTransformer, ISAVIT
from torch.optim import Adam
import torch.nn as nn
import torch.nn.functional as F
from tqdm.auto import tqdm
import matplotlib.pyplot as plt
from project.model.feeder import Feeder
import seaborn as sns
```

```
INFO:albumentations.check_version:A new version of Albumentations is
available: 1.4.21 (you have 1.4.7). Upgrade using: pip install --
upgrade albumentations
C:\Users\araza\AppData\Roaming\Python\Python310\site-packages\tqdm\
auto.py:21: TqdmWarning: IProgress not found. Please update jupyter
and ipywidgets. See
https://ipywidgets.readthedocs.io/en/stable/user_install.html
  from .autonotebook import tqdm as notebook_tqdm
```

```
import logging
from datetime import datetime as dtt
import os

path = 'logs'
os.makedirs(path, exist_ok=True)
dte = dtt.now().strftime('%b_%d_%Y_%H%M%S')

logger = logging.getLogger('andy')
fh = logging.FileHandler(f'logs/{dte}.log')
formatter = logging.Formatter(
    '%(asctime)s - %(levelname)s - %(message)s'
)

logger.setLevel(logging.DEBUG)
fh.setLevel(logging.DEBUG)
fh.setFormatter(formatter)

logger.addHandler(fh)
```

```
dte
```

```
'Nov_02_2024_204540'
```

```
device = 'cuda' if torch.cuda.is_available() else 'cpu'
device
```

```
'cuda'
```

Config for fitter

```
image_size = 300
patch_size = 16

config = {
    'model': ISAVIT(
        d_model=512,
        patch_size=patch_size,
        dim_ff=1600
    ).to(device),
    'optimizer': torch.optim.Adam,
    'device': device,
    'epochs': 10,
    'loss': nn.BCEWithLogitsLoss(),
    # 'loss': nn.MSELoss(),
    'lr': 0.0001
}
```

```
C:\Program Files\Python310\lib\site-packages\torch\nn\modules\
transformer.py:306: UserWarning: enable_nested_tensor is True, but
self.use_nested_tensor is False because
encoder_layer.self_attn.batch_first was not True(use batch_first for
better inference performance)
  warnings.warn(f"enable_nested_tensor is True, but
self.use_nested_tensor is False because {why_not_sparsity_fast_path}")
```

Create Stage 1 Network

```
from project.model import Feeder, RPN, GCRPN

resize = get_transform(
    height=patch_size,
    width=patch_size,
    p=1.0,
    rpn_mode=False
)

feeder = Feeder(resize)
rpn = RPN(
    input_dim=512,
```

```
    output_dim=4,
    image_size=image_size,
    nh=4
)

stone = GCRPN(
    rpn=rpn,
    feeder=feeder,
    image_size=image_size,
    patch_size=patch_size
)
```

```
324
```

```
stone.rpn.load_state_dict(torch.load('RPN_test15_weights_Nov_02_2024_192506.pt'))
```

```
<All keys matched successfully>
```

Load ViT Weights

Load dataset

```
ds = Dataset()

data = pd.read_csv('targets.csv')
data.shape
```

```
(7986, 8)
```

```
data = data.query('has_microbleed_slice == 1').reset_index(drop=True)
data
```

```
                                                   mri  \
0    C:\Users\araza\Documents\1\gits\thesis_project...
1    C:\Users\araza\Documents\1\gits\thesis_project...
2    C:\Users\araza\Documents\1\gits\thesis_project...
3    C:\Users\araza\Documents\1\gits\thesis_project...
4    C:\Users\araza\Documents\1\gits\thesis_project...
..                                                 ...
359  C:\Users\araza\Documents\1\gits\thesis_project...
360  C:\Users\araza\Documents\1\gits\thesis_project...
361  C:\Users\araza\Documents\1\gits\thesis_project...
362  C:\Users\araza\Documents\1\gits\thesis_project...
363  C:\Users\araza\Documents\1\gits\thesis_project...

                                                 masks  target  \
0    C:\Users\araza\Documents\1\gits\thesis_project...       8
1    C:\Users\araza\Documents\1\gits\thesis_project...       9
2    C:\Users\araza\Documents\1\gits\thesis_project...      11
3    C:\Users\araza\Documents\1\gits\thesis_project...      12
```

```
4    C:\Users\araza\Documents\1\gits\thesis_project...      15
..                                                   ...     ...
359  C:\Users\araza\Documents\1\gits\thesis_project...      25
360  C:\Users\araza\Documents\1\gits\thesis_project...      26
361  C:\Users\araza\Documents\1\gits\thesis_project...      24
362  C:\Users\araza\Documents\1\gits\thesis_project...      25
363  C:\Users\araza\Documents\1\gits\thesis_project...      20

     has_microbleed_case  has_microbleed_slice  cohort   max_value
slices
0                      1                     1       1  928.405273
35
1                      1                     1       1  928.405273
35
2                      1                     1       1  928.405273
35
3                      1                     1       1  928.405273
35
4                      1                     1       1  928.405273
35
..                   ...                   ...     ...         ...
...
359                    1                     1       3  241.000000
36
360                    1                     1       3  241.000000
36
361                    1                     1       3  448.000000
39
362                    1                     1       3  448.000000
39
363                    1                     1       3  253.000000
39

[364 rows x 8 columns]
```

`DataLoader` Generator

```
def iqr(data, col):
    q3 = data[col].quantile(0.75)
    q1 = data[col].quantile(0.25)
    iqr = q3-q1
    new = data[(data[col] < (q3 + 1.5*iqr)) & (data[col] > (q1 -
1.5*iqr))]
    return new

from sklearn.model_selection import train_test_split

def make_loaders(data,
                 cohort,
                 batch_size,
```

```
                test_size=0.2,
                random_state=12,
                target_shape=(300, 300),
                rpn_mode=True,
                logger=None
               ):
    data = data[data.cohort == cohort]
    # data = iqr(data, 'max_value')

    s = f'Creating loaders for Cohort {cohort}\n'

    data_train, data_test = train_test_split(
        data,
        test_size=test_size,
        random_state=random_state
    )

    s += f'TRAIN & TEST: {data_train.shape, data_test.shape}\n'

    paths = data_train.mri.unique().tolist()
    s += f'Total Unique MRI Samples in data_train: {len(paths)}\n'

    global_min, global_max = compute_statistics(paths)
    s += f'GLOBAL MIN & MAX {global_min, global_max}\n'

    transform = NiftiToTensorTransform(
        target_shape=target_shape,
        rpn_mode=rpn_mode,
        normalization=(global_min, global_max)
    )

    train_set = VALDODataset(
        cases=data_train.mri.tolist(),
        masks=data_train.masks.tolist(),
        target=data_train.target.tolist(),
        transform=transform
    )
    val_set = VALDODataset(
        cases=data_test.mri.tolist(),
        masks=data_test.masks.tolist(),
        target=data_test.target.tolist(),
        transform=transform
    )

    train_loader = DataLoader(
        train_set,
        shuffle=True,
        batch_size=batch_size,
        collate_fn=collatev2
    )
```

```
    val_loader = DataLoader(
        val_set,
        shuffle=True,
        batch_size=batch_size,
        collate_fn=collatev2
    )

    if logger != None:
        logger.info(s)
    else:
        print(s)

    return train_loader, val_loader
```

Fitter

```
from project import Fitter

class ViTFitter(Fitter):

    def fit(self, train_loader, val_loader, stage1):
        train_history = []
        val_history = []
        for epoch in range(self.epochs):
            self.log(f'EPOCH {epoch} ==============================')
            train_loss = self.train_one_epoch(train_loader, stage1)
            val_loss = self.validation(val_loader, stage1)
            train_history.append(train_loss)
            val_history.append(val_loss)
        return train_history, val_history

    def train_one_epoch(self, train_loader, stage1):
        self.model.train()
        loss_history = []
        counter = 0
        for batch in train_loader:
            Y = []
            T = []
            for slices, masks, target, case in batch:
                slices = slices.squeeze(1).float()
                masks = masks.float()

                with torch.inference_mode():
                    x, t = stage1(slices, masks, target)

                self.log(f'{x.requires_grad}, {t.requires_grad}')
                self.log(f'{x.shape}, {t.shape}')

                x = x.flatten(2).float().to(self.device)
                t = t.flatten(2).float().to(self.device)
```

```
                self.log(f'XT SHAPES: {x.shape}, {t.shape}')

                y = self.model(x, target)
                Y.append(y)
                T.append(t[target])

            losses = self.loss(torch.stack(Y), torch.stack(T))
            self.optimizer.zero_grad()
            losses.backward()
            self.optimizer.step()
            counter += 1
            self.log(f'Batch:\t{counter}/{len(train_loader)}')
            self.log(f'Batch samples:\t{len(batch)}')
            self.log(f'Current error:\t{losses}\n')

            loss_history.append(losses.detach().cpu().numpy())

        return loss_history
    def validation(self, val_loader, stage1):
        self.model.eval()
        loss_history = []
        with torch.inference_mode():
            for batch in val_loader:
                Y = []
                T = []
                for slices, masks, target, case in batch:
                    slices = slices.squeeze(1).float()
                    masks = masks.float()
                    x, t = stage1(slices, masks, target)
                    x = x.flatten(2).float().to(self.device)
                    t = t.flatten(2).float().to(self.device)
                    y = self.model(x, target)
                    Y.append(y)
                    T.append(t[target])

                losses = self.loss(torch.stack(Y), torch.stack(T))
                loss_history.append(losses.cpu().numpy())
        return loss_history

fitter = ViTFitter(config, logger=logger)
```

Training

```
tl, vl = make_loaders(
    data=data,
    cohort=1,
    rpn_mode=False,
    batch_size=20
)
```

```
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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setting qfac to 1

Creating loaders for Cohort 1
TRAIN & TEST: ((36, 8), (9, 8))
Total Unique MRI Samples in data_train: 8
GLOBAL MIN & MAX (0.0, 1417.92822265625)


thist, vhist = fitter.fit(tl, vl, stone)

INFO:andy:EPOCH 0 ================================
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
C:\Program Files\Python310\lib\site-packages\torch\nn\
```

```
functional.py:5504: UserWarning: 1Torch was not compiled with flash
attention. (Triggered internally at ..\aten\src\ATen\native\
transformers\cuda\sdp_utils.cpp:455.)
  attn_output = scaled_dot_product_attention(q, k, v, attn_mask,
dropout_p, is_causal)
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
```

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256])
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.7589693665504456

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
```

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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
```

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256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:   16
INFO:andy:Current error:   0.7150628566741943

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 1 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
```

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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.6808748245239258

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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setting qfac to 1
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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

```
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:    16
INFO:andy:Current error:    0.6499161720275879

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 2 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
```

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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:    20
INFO:andy:Current error:    0.6138336062431335

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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INFO:andy:False, False
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:    16
INFO:andy:Current error:    0.5796400308609009

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:EPOCH 3 ==============================
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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INFO:andy:False, False
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256])
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256])
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256])
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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256])
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch:	1/2
INFO:andy:Batch samples:	20
INFO:andy:Current error:	0.5501141548156738

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:   16
INFO:andy:Current error:   0.5230070948600769

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 4 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
```

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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.4993766248226166

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch:	2/2
INFO:andy:Batch samples:	16
INFO:andy:Current error:	0.4783817529678345

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 5 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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256])
INFO:andy:False, False
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256])
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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
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INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.46001648902893066

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:    16
INFO:andy:Current error:    0.4377693831920624

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 6 ==============================
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
```

```
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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256])
INFO:andy:False, False
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256])
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.422309011220932

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
```

```
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

```
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:    16
INFO:andy:Current error:    0.39734745025634766

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 7 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

```
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:    20
INFO:andy:Current error:    0.390960693359375

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
```

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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:    16
INFO:andy:Current error:    0.37662574648857117

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 8 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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setting qfac to 1
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
```

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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.3640730082988739

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:   16
```

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INFO:andy:Current error:   0.3491460680961609

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
INFO:andy:EPOCH 9 ==============================
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
```

```
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 1/2
INFO:andy:Batch samples:   20
INFO:andy:Current error:   0.34101197123527527

pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
INFO:nibabel.global:pixdim[0] (qfac) should be 1 (default) or -1;
setting qfac to 1
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
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INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
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256])
INFO:andy:False, False
INFO:andy:torch.Size([35, 1, 16, 16]), torch.Size([35, 1, 16, 16])
INFO:andy:XT SHAPES: torch.Size([35, 1, 256]), torch.Size([35, 1,
256])
INFO:andy:Batch: 2/2
INFO:andy:Batch samples:   16
INFO:andy:Current error:   0.3303448557853699

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```

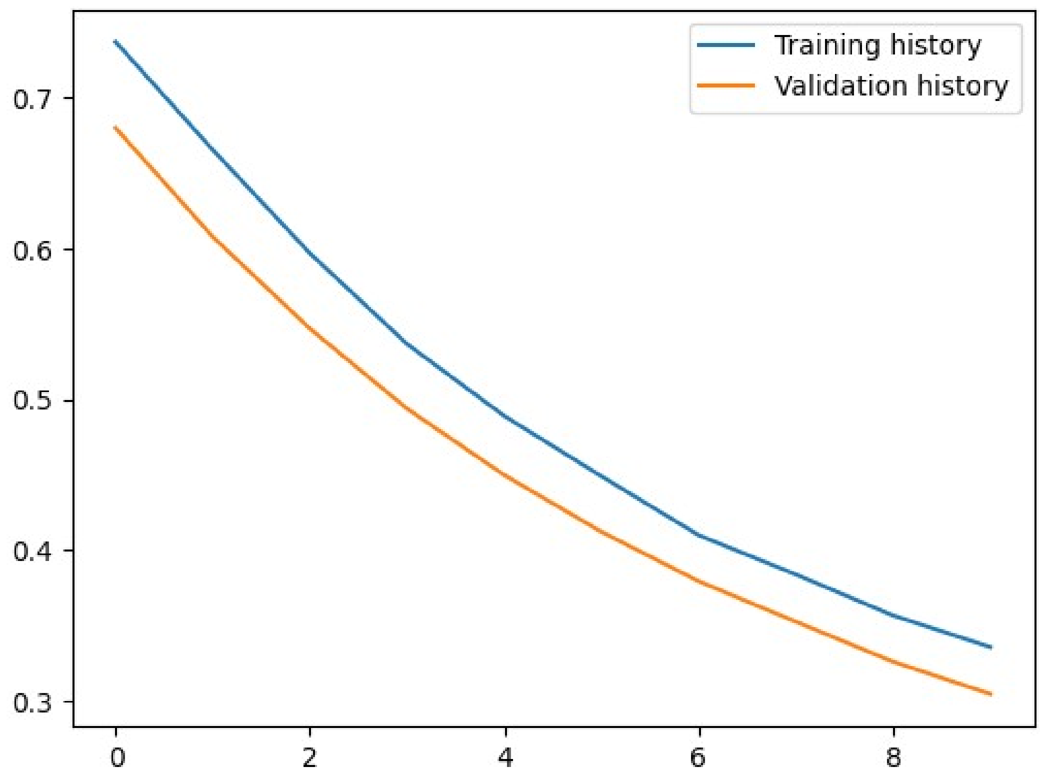
```python
import winsound

winsound.Beep(500, 500)
winsound.Beep(500, 500)
winsound.Beep(500, 500)
```

```python
import seaborn as sns
import numpy as np

th = torch.tensor(np.array(thist))
vh = torch.tensor(np.array(vhist))
# print(th.shape)
sns.lineplot(th.mean(1), label='Training history')
sns.lineplot(vh.mean(1), label='Validation history')
```

```
<Axes: >
```



Trial

```
sample = next(enumerate(tl))
```

```
pixdim[0] (qfac) should be 1 (default) or -1; setting qfac to 1
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```
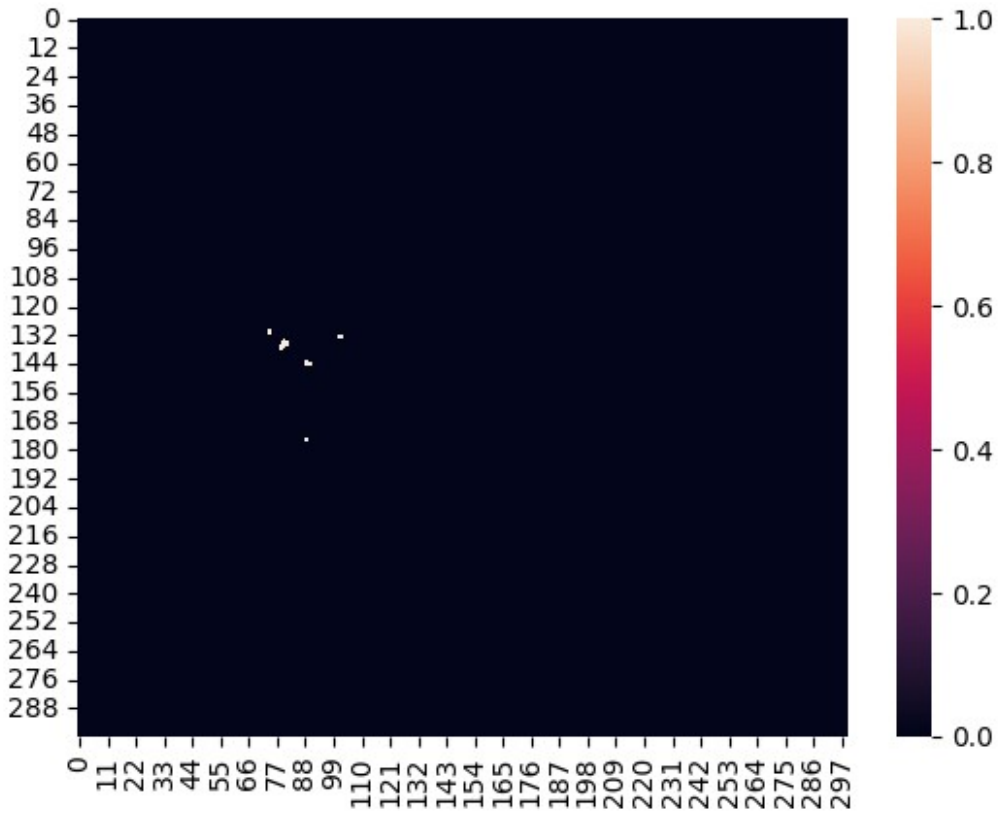

```
case = sample[1][0]
```

```
slices, masks, target, path = case
```

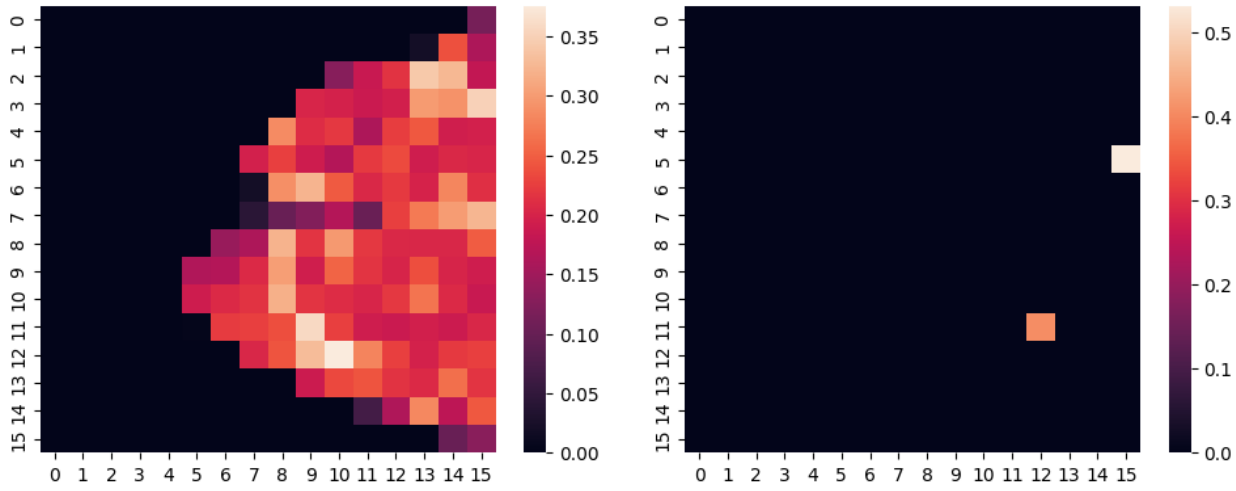
```
sns.heatmap(masks[target].squeeze())
```

```
<Axes: >
```




```
slices = slices.squeeze(1).float()
masks = masks.float()

x, t = stone(slices, masks, target)

f, a = plt.subplots(1, 2, figsize=(10, 4))

f.tight_layout()
sns.heatmap(x[target].squeeze(), ax=a.flat[0])
sns.heatmap(t[target].squeeze(), ax=a.flat[1])
```

```
<Axes: >
```




```
vit = config['model']
```

```
x.shape
```

```
torch.Size([35, 1, 16, 16])
```

```
y = vit(x.flatten(2).to(device), target)
```

```
y = y.view(patch_size, patch_size)
```

```
f, a = plt.subplots(1, 2, figsize=(10, 4))
```

```
f.tight_layout()
sns.heatmap((y > -0.5).detach().cpu(), ax=a.flat[0])
sns.heatmap(t[target].squeeze(), ax=a.flat[1])
```

```
<Axes: >
```