高级大数据解析

PJ2：diffusion

- **code**：https://github.com/q-i-n-g/fast-DiT

Model

```
DiT(depth=28, hidden_size=1152, patch_size=4, num_heads=16, **kwargs)
```

Train

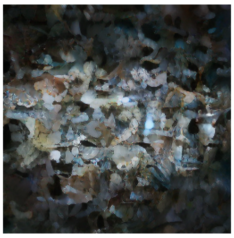
数据准备

```
torchrun --nnodes=1 --nproc_per_node=1 data_prepare.py --model DiT-XL/4 --data-path ./Data
```

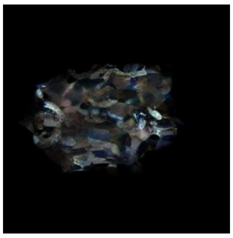
训练

```
accelerate launch --multi_gpu --num_processes 7 --mixed_precision fp16 train.py --model DiT-XL/4 --feature-path features --num-classes 1 --epochs 220 --global-batch-size 896 --num-workers 24
```

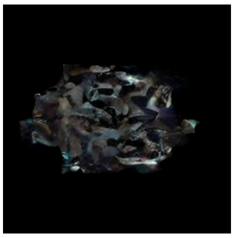
训练过程



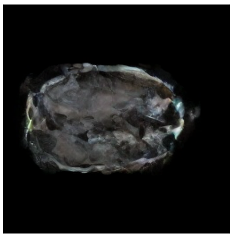
2 epoch



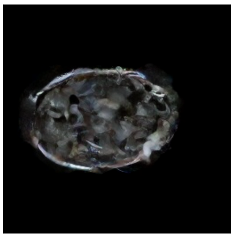
4 epoch



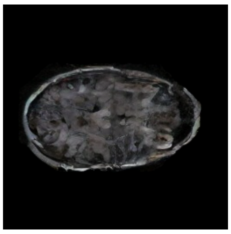
6 epoch

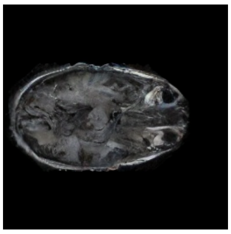


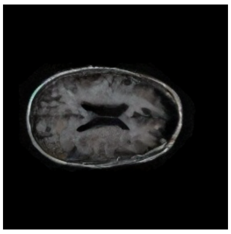
8 epoch

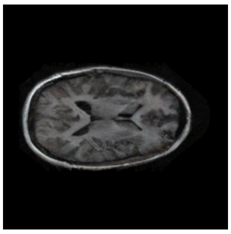


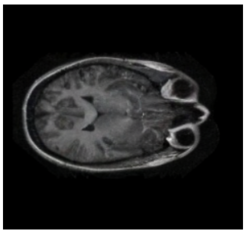
10 epoch









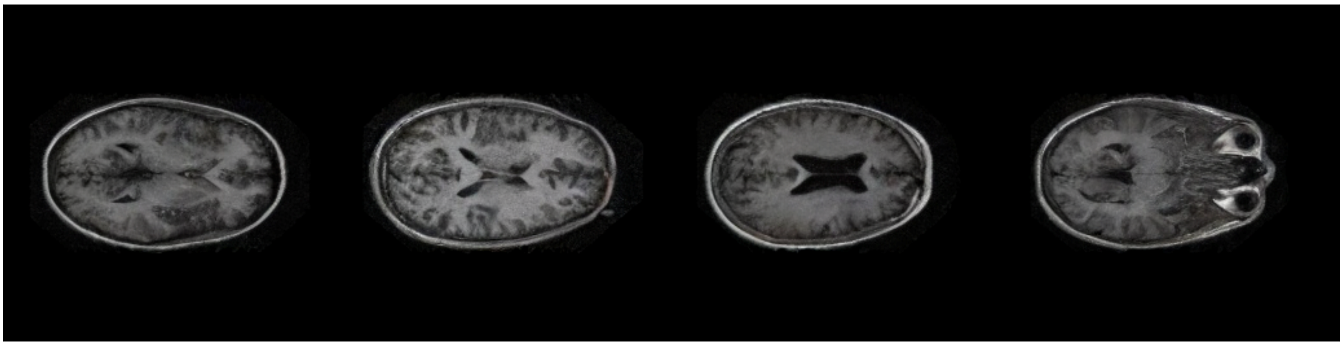


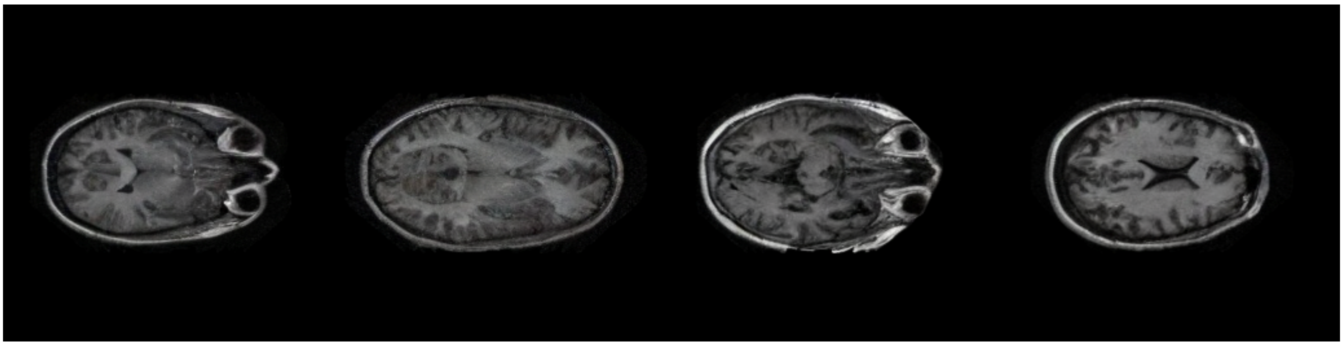
28 epoch	36 epoch	54 epoch	148 epoch	220 epoch

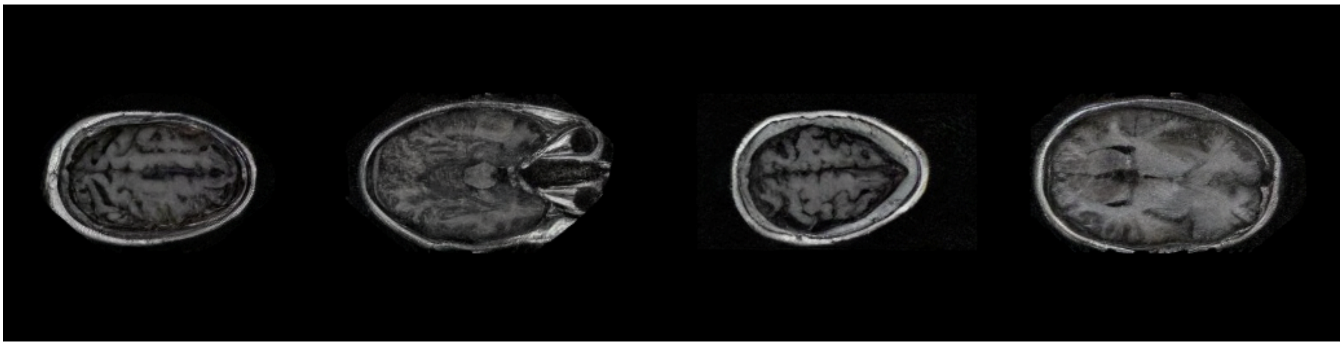
- Loss: results/log.txt

Sample

```
python sample.py --ckpt results/0022000.pt
```







PJ3: Masked Autoencoder

- code：https://github.com/q-i-n-g/mae

Model

```
model = MaskedAutoencoderViT(
        patch_size=16, embed_dim=768, depth=12, num_heads=12,
        decoder_embed_dim=512, decoder_depth=8, decoder_num_heads=16,in_chans=1,
        mlp_ratio=4, norm_layer=partial(nn.LayerNorm, eps=1e-6), **kwargs)
```

Train

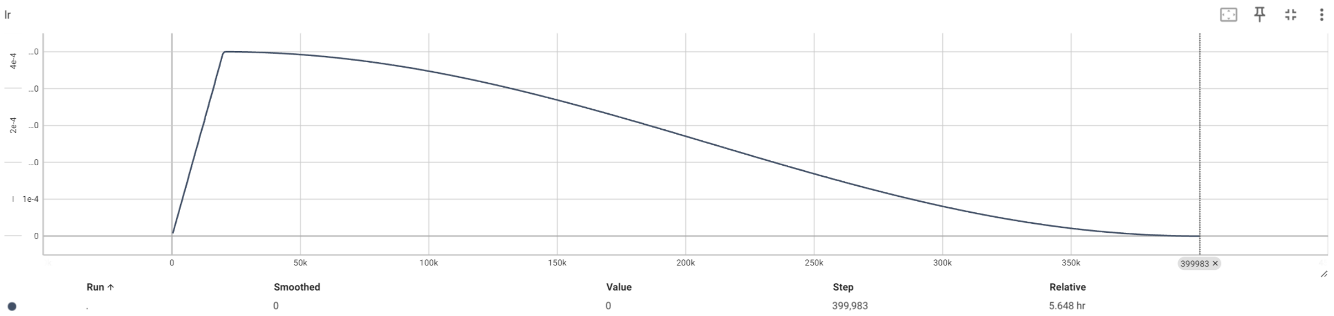
数据准备

```
python data_prepare.py
```

训练

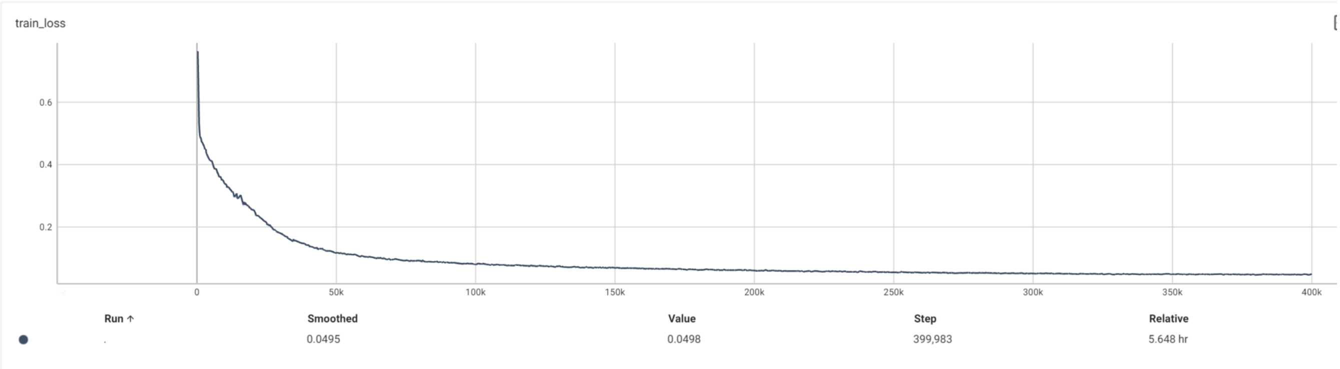
```
export CUDA_VISIBLE_DEVICES=1,2,3,4
export OMP_NUM_THREADS=1
torchrun --nnodes=1 --nproc_per_node=4 main_pretrain.py \
    --accum_iter 4 \
    --batch_size 64 \
    --model mae_vit_base_patch16 \
    --norm_pix_loss \
    --epochs 400 \
    --blr 1e-4 \
    --weight_decay 0.05 \
    --mask_ratio 0.5 \
    --warmup_epochs 20 \
    --input_size 224 \
    --data_path Data/combined_images
```

训练过程



Run ↑	Smoothed	Value	Step	Relative
● .	0	0	399,983	5.648 hr

lr-step



Run ↑	Smoothed	Value	Step	Relative
.	0.0495	0.0498	399,983	5.648 hr

loss-step

Sample

demo/mae_visualize.ipynb

选择测试集上的图片做测试