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## GAN stability

This repository contains the experiments in the supplementary material for the paper Which Training Methods for GANs do actually Converge?.

To cite this work, please use

```
1 @INPROCEEDINGS{Mescheder2018ICML,
2   author = {Lars Mescheder and Sebastian Nowozin and Andreas Geiger},
3   title = {Which Training Methods for GANs do actually Converge?},
4   booktitle = {International Conference on Machine Learning (ICML)},
5   year = {2018}
6 }
```

You can find further details on our project page.

## Usage

First download your data and put it into the `./data` folder.

To train a new model, first create a config script similar to the ones provided in the `./configs` folder. You can then train you model using

```
1 python train.py PATH_TO_CONFIG
```

To compute the inception score for your model and generate samples, use

```
1 python test.py PATH_TO_CONFIG
```

Finally, you can create nice latent space interpolations using

```
1 python interpolate.py PATH_TO_CONFIG
```

or

```
1 python interpolate_class.py PATH_TO_CONFIG
```

## Pretrained models

We also provide several pretrained models.

You can use the models for sampling by entering

```
1 python test.py PATH_TO_CONFIG
```

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where `PATH_TO_CONFIG` is one of the config files

```
1 configs/pretrained/celebA_pretrained.yaml
2 configs/pretrained/celebAHQ_pretrained.yaml
3 configs/pretrained/imagenet_pretrained.yaml
4 configs/pretrained/lsun_bedroom_pretrained.yaml
5 configs/pretrained/lsun_bridge_pretrained.yaml
6 configs/pretrained/lsun_church_pretrained.yaml
7 configs/pretrained/lsun_tower_pretrained.yaml
```

Our script will automatically download the model checkpoints and run the generation. You can find the outputs in the `output/pretrained` folders. Similarly, you can use the scripts `interpolate.py` and `interpolate_class.py` for generating interpolations for the pretrained models.

Please note that the config files `*_pretrained.yaml` are only for generation, not for training new models: when these configs are used for training, the model will be trained from scratch, but during inference our code will still use the pretrained model.

## Notes

- Batch normalization is currently *not* supported when using an exponential running average, as the running average is only computed over the parameters of the models and not the other buffers of the model.

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## Results

celebA-HQ



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## Imagenet





