

# FP16 working, great improvements on performance

## Outdated Guide

This guide is very outdated

For up-to-date information and discussion you can join the discords:

Dreambooth, Native Training, Hypernetworks and General SD Discussion: <https://discord.gg/xVsyrmhQWS>

Waifu Diffusion: <https://github.com/harubaru/waifu-diffusion>

## Related:

For more information SD-Related, check <https://reentry.org/sdupdates> It includes the good-old news feed I used on the first /sdg/ threads

## TLDR:

- Works on 20GB VRAM now (3090 bros), without a need of massive RAM

look I will write this with no organization whats so ever beacuse thats what takes time

If you have any problems, you can always join "stable-diffusion-training-lounge" discord: <https://discord.gg/xVsyrmhQWS>

I am also writing this because currently im running a file\_ext extractor thats going to take a while so yeah I dont want to waste my time this is pseudo windows and linux.

requirements for personal instance, can be win or linux:

anything really, just a big drive with at least 30gb free

requirements for linux instance:

at least 30gb of disk storage, 30.5gb of vram, and 11gb of ram

you need both not just one

if you can't understand something in this guide again, go to the discord cuz im not going to edit this a million times like the prior guide I did and a ton of people accused me for spreading misinformation

Im also writing this off my head beacuse paperspace just terminated me temporaly

my setup is as follows:

windows with cygterminal installed

linux with a6000 40gb of vram AND ram, 50gb of disk storage

lets start with the dataset

go down to see the dataset format

download cygwin if on windows, if on linux just install rsync

LETS SAY I want to download batches 0000-0009, do this:

```
rsync --progress rsync://176.9.41.242:873/danbooru2021/512px/000\* ./512px/
```

this will download the folders 0000 to 0009 onn 512px

now the metadata:

```
rsync --progress rsync://176.9.41.242:873/danbooru2021/metadata/posts000000000000.json ./metadata/
```

same thing but on metadata folder

now lets extract the images along with its tags.

download the extractor

wget [https://github.com/chavinlo/waifu-diffusion/blob/patch-3/danbooru\\_data/local/extractfromjson\\_danboo21.py](https://github.com/chavinlo/waifu-diffusion/blob/patch-3/danbooru_data/local/extractfromjson_danboo21.py)

flags:

--jsonpath path to json

--extractpath path to where to extract the images and text files

--rating optional, select ratings from e (explicit), g (general), q (questionable) or s (safe), only put the letter in small caps

--convtohuman ignore its broken currently

--imagespath optional, put the path to images, if none it will default to 512px

so it should be:

py extractfromjson\_danboo21.py --jsonpath metadata/posts000000000000.json --extractpath extracted --imagespath 512px --rating s  
why rating s? beacuse everything in the 512px folder is only rated safe anyways. explicit and rest are on original folder but for more info on that join the discord this will just explain the basics

it will output everything to the folder "extracted"

there will be txt files and jpg files both with same names

now you compress them and send it to your training (linux) instance

once there, run the following:

```
git clone https://github.com/harubaru/waifu-diffusion
cd waifu-diffusion
pip install -e .
pip install omegaconf einops pytorch-lightning==1.6.5 test-tube transformers kornia
pip install -e git+https://github.com/CompVis/taming-transformers.git@master#egg=taming-transformers
pip install -e git+https://github.com/openai/CLIP.git@main#egg=clip
pip install setuptools==59.5.0
pip install pillow==9.0.1
pip install torchmetrics==0.6.0
```

IF ANY OF THE DEPENDENCIES FAIL TO INSTALL, just install them again but without the specific versions and individually

IF YOU GET "module not found taming/clip" ERROR, just copy as follows:

download the zip from <https://github.com/CompVis/taming-transformers> (source code)

unzip, and copy the "taming" folder to the root directory of the waifu diffusion repo

same for CLIP, download zip from <https://github.com/openai/CLIP.git> , unzip, copy the folder "clip" and to root directory of repo

download your dataset.zip

```
unzip dataset.zip
cd dataset
mkdir txt
mkdir img
mv .txt txt
mv img
cd ..
mv dataset danbooru-aesthetic
```

Unless haru (waifu mantainer) confirms that the loading directory is no longer hardcoded, DO NOT CHANGE THE FOLDER NAME AT ALL.  
this caused me so many problems.

nano [my-train.sh](#)

add the following:

```
python3 main.py -t -n "waifu-diffusion" --resume_from_checkpoint model.ckpt --base ./configs/stable-diffusion/v1-finetune-4gpu.yaml --no-test --seed 25 --scale_lr False --gpus 0, --data_root "./danbooru-aesthetic"
```

you could try with the 1gpu yaml config, but the 4gpu works exactly the same.

Remember to add a coma next to gpu count

--resume\_from\_checkpoint does passes the model now, you can try with a nonexistent file and you will see it fails loading it

ctrl-x, save, yes same name

```
chmod +x my-train.sh
./my-train.sh
```

to resume training, just change the --resume\_from\_checkpoint path to the latest model, remember that they will be stored on the logs folder.  
Everytime you run the script, a new folder will be created, most of which will weight about 3gb each, so be careful with storage.

TROUBLESHOOTING HERE:

there might be a million errors more after this guide, so again, JOIN THE SERVER IF YOU HAVE QUESTIONS

ERROR 1: KeyError: 'Trying to restore optimizer state but checkpoint contains only the model. This is probably due to ModelCheckpoint.save\_weights\_only being set to True.'

FIX 1:

patch pytorch lighting as follows, credits to haru and astralite for the fix:

your terminal will most likely print a path that points to a file named "checkpoint\_connector.py" during the logtrace, copy that path

nano PATH TO checkpoint\_connector.py

search for "state\_dict" and remove everything after it and replace it for "and False:"

should be something like this, remember that it varies through versions:

<https://media.discordapp.net/attachments/979237546028597288/1016238769562734672/unknown.png>  
<https://i.imgur.com/32YLz1.png>

search for the call of "self.restore\_optimizers\_and\_schedulers()" or the definition of "restore\_training\_state"  
comment out the call of "self.restore\_optimizers\_and\_schedulers()" should be like this:

<https://media.discordapp.net/attachments/979237546028597288/1016239598202015825/unknown.png>  
<https://i.imgur.com/iAGud4J.png>

ERROR 2: `FileNotFoundError: [Errno 2] No such file or directory: ''`  
full traceback:

```
Traceback (most recent call last):
  File "/notebooks/waifu-diffusion/main.py", line 719, in <module>
    trainer.fit(model, data)
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 770, in fit
    self._call_and_handle_interrupt(
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 721, in
_call_and_handle_interrupt
    return self.strategy.launcher.launch(trainer_fn, args, trainer=self, **kwargs)
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/strategies/launchers/subprocess_script.py", line 93, in
launch
    return function(args, kwargs)
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 811, in _fit_impl
    results = self._run(model, ckpt_path=self.ckpt_path)
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 1236, in _run
    results = self._run_stage()
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 1323, in _run_stage
    return self._run_train()
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 1342, in _run_train
    self._pre_training_routine()
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 1335, in _pre_training_routine
    self._call_callback_hooks("on_pretrain_routine_start")
  File "/usr/local/lib/python3.9/dist-packages/pytorch_lightning/trainer/trainer.py", line 1636, in _call_callback_hooks
    fn(self, self.lightning_module, *args, kwargs)
  File "/notebooks/waifu-diffusion/main.py", line 260, in on_pretrain_routine_start
    os.makedirs(self.logdir, exist_ok=True)
  File "/usr/lib/python3.9/os.py", line 225, in makedirs
    mkdir(name, mode)
FileNotFoundError: [Errno 2] No such file or directory: ''
```

FIX 2: put the model on waifu-diffusion/logs/original/checkpoints/last.ckpt  
waifu-diffusion being the root of the repo  
CHANGE THE [my-train.sh](#) FILE TOO:

```
python3 main.py -t -n "waifu-diffusion" --resume_from_checkpoint logs/original/checkpoints/last.ckpt --base
./configs/stable-diffusion/v1-finetune-4gpu.yaml --no-test --seed 25 --scale_lr False --gpus 0, --data_root "./danbooru-
aesthetic"
```

ERROR 3: cannot find module "clip" or "taming"

FIX 3:  
IF ANY OF THE DEPENDENCIES FAIL TO INSTALL, just install them again but without the specific versions and individually  
IF YOU GET "module not found taming/clip" ERROR, just copy as follows:  
download the zip from <https://github.com/CompVis/taming-transformers> (source code)  
unzip, and copy the "taming" folder to the root directory of the waifu diffusion repo  
same for CLIP, download zip from <https://github.com/openai/CLIP.git>, unzip, copy the folder "clip" and to root directory of repo

ERROR 4: `AttributeError: 'int' object has no attribute 'strip'`  
traceback:

```
Traceback (most recent call last):
  File "C:\Users\T\waifu-diffusion\main.py", line 676, in <module>
    ngpu = len(lightning_config.trainer.gpus.strip(",").split(','))
AttributeError: 'int' object has no attribute 'strip'
```

FIX 4:  
add a coma to gpu count  
if one gpu:  
--gpus 0,

ERROR 5: script just closes out of nowhere without output (well it prints one blank line and then it exits)

FIX 5:

you are probably running [train.sh](#) which is a little bit broken, its hard to explain

First, reinstalled all the dependencies from your message, then added `--data_root "./danbooru-aesthetic"` and renamed my data folder to that name (it was a step that I forgot) but even so it exited, then I tried with `-n "waifu-diffusion"` but got a conflict with `--resume` parameter so changed it to `--resume_from_checkpoint` with the same path, and then boom it worked

but what I am worried about if its actually using the checkpoint/weights because I remember you said not too long ago that it didnt even passed the `--resume_from_checkpoint` flag, although I just tried with a non-existent path and it does seem to know that it doesnt exists, but maybe its just that and it

alright that should be it

my parsing got completed, over 3million images which im defo not going to use

see you all next time and updates will be either on my discord (<https://discord.gg/xVsyrmhQWS>), touhou ai discord or the official wd repo

remember join the discord for support or any questions