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虚拟试衣实践



一样的教育，不一样的品质

目录

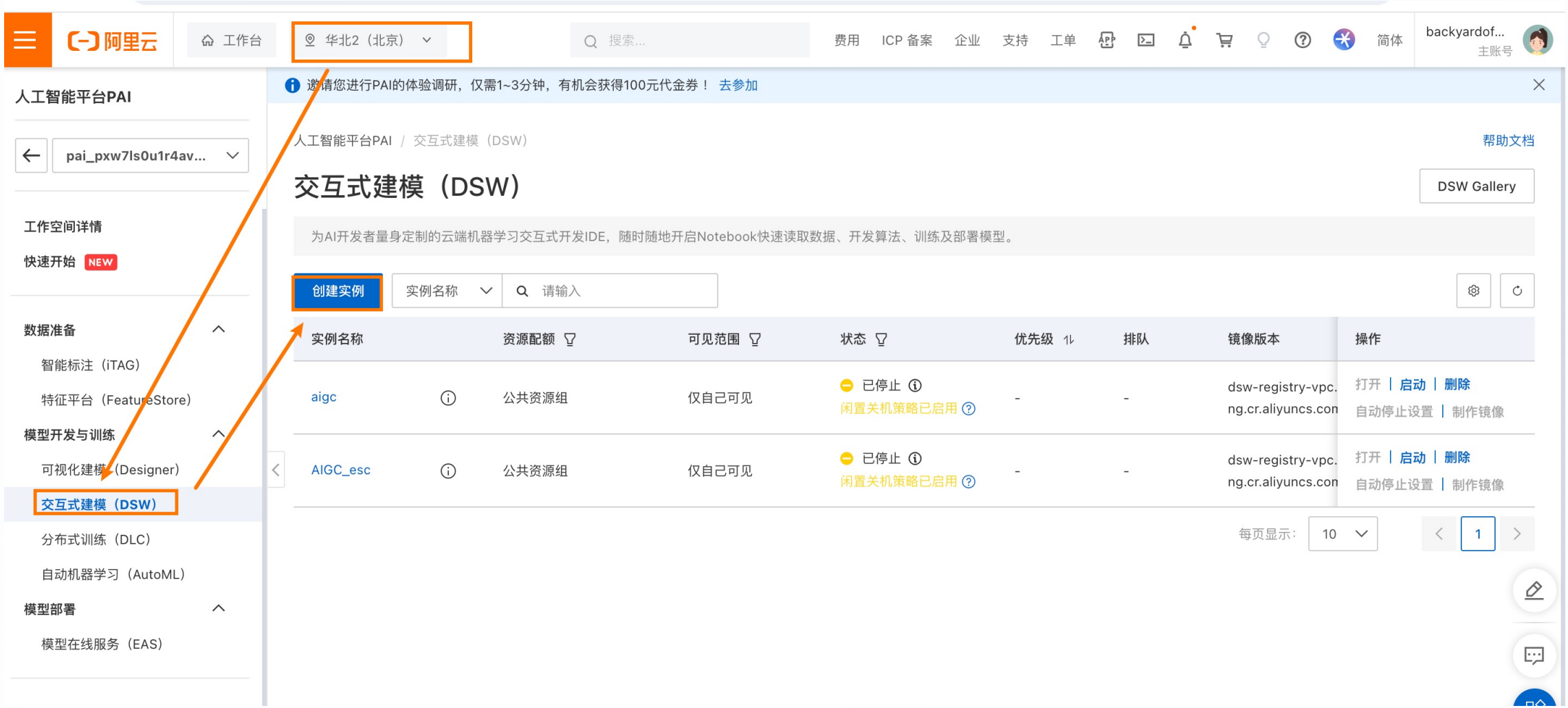
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6. 模型部署
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01

创建DSW实例

创建DSW实例


阿里云
工作台
华北2（北京）
搜索...
费用
ICP 备案
企业
支持
工单
简体
backyardof...
主账号
人工智能平台PAI
邀请您进行PAI的体验调研，仅需1~3分钟，有机会获得100元代金券！ 去参加
pai_pxw7ls0u1r4av...
工作空间详情
快速开始 NEW
数据准备
智能标注（iTAG）
特征平台（FeatureStore）
模型开发与训练
可视化建模（Designer）
交互式建模（DSW）
分布式训练（DLC）
自动机器学习（AutoML）
模型部署
模型在线服务（EAS）
人工智能平台PAI / 交互式建模（DSW）
帮助文档
交互式建模（DSW）
DSW Gallery
为AI开发者量身定制的云端机器学习交互式开发IDE，随时随地开启Notebook快速读取数据、开发算法、训练及部署模型。
创建实例
实例名称
请输入
实例名称
资源配额
可见范围
状态
优先级
排队
镜像版本
操作
aigc
公共资源组
仅自己可见
已停止
闲置关机策略已启用
-
-
dsw-registry-vpc.
ng.cr.aliyuncs.com
打开 | 启动 | 删除
自动停止设置 | 制作镜像
AIGC_esc
公共资源组
仅自己可见
已停止
闲置关机策略已启用
-
-
dsw-registry-vpc.
ng.cr.aliyuncs.com
打开 | 启动 | 删除
自动停止设置 | 制作镜像
每页显示：
10
1

创建DSW实例-实例信息设置



创建DSW实例-资源配置

* 资源配额

公共资源(后付费)

若当前工作空间下没有可选的资源配额，请前往 工作空间 关联资源配额使用。

CPU规格 | GPU规格

部分规格支持通过 PAI-DSW 资源抵扣包 进行抵扣，免费试用实例会自动开启闲置关机 功能。入门版资源包限时3折优惠，低至59元，点击购买

	规格名称	CPU	内存 GB	GPU	显存	带宽	价格
○	ecs.gn6v-c8g1.2xlarge (支持资源包抵扣)	8 vCPU	32 GB	1 * NVIDIA V100	1 * 16GB	2.5 Gbps	¥ 29.11 /小时 (或14.553计算时/小...
◉	ecs.gn7i-c8g1.2xlarge (支持资源包抵扣)	8 vCPU	30 GB	1 * NVIDIA A10	1 * 24GB	16 Gbps	¥ 10.49 /小时 (或6.991计算时/小...
○	ecs.ebmgn7e.32xlarge	128 vCPU	1024 GB	8 * GU100	8 * 80GB	64 Gbps	¥ 305.73 /小时
○	ecs.gn5-c28g1.7xlarge	28 vCPU	112 GB	1 * NVIDIA P100	1 * 16GB	5 Gbps	¥ 26.27 /小时
○	ecs.gn5-c4g1.xlarge	4 vCPU	30 GB	1 * NVIDIA P100	1 * 16GB	3 Gbps	¥ 14.06 /小时
○	ecs.gn5-c8g1.2xlarge	8 vCPU	60 GB	1 * NVIDIA P100	1 * 16GB	3 Gbps	¥ 16.93 /小时
○	ecs.gn5-c8g1.4xlarge	16 vCPU	120 GB	2 * NVIDIA P100	2 * 16GB	5 Gbps	¥ 33.86 /小时

最低配置是这个，显存在24GB以上

当前选中规格: ecs.gn7i-c8g1.2xlarge(8 vCPU，30GB)

创建DSW实例-存储配置（无需修改）

存储配置

系统盘

每个按量付费实例赠送100GiB免费云盘做持久化存储，实例停机后云盘15天内不回收，实例被删除时，云盘被同步销毁。免费空间有限，您可在下方配置数据集挂载实现实例存储空间扩展。

100 GB

共享数据集

支持挂载OSS、NAS、CPFS类型的数据集，您可以选择已经创建好的数据进行挂载，也可以点击创建数据集

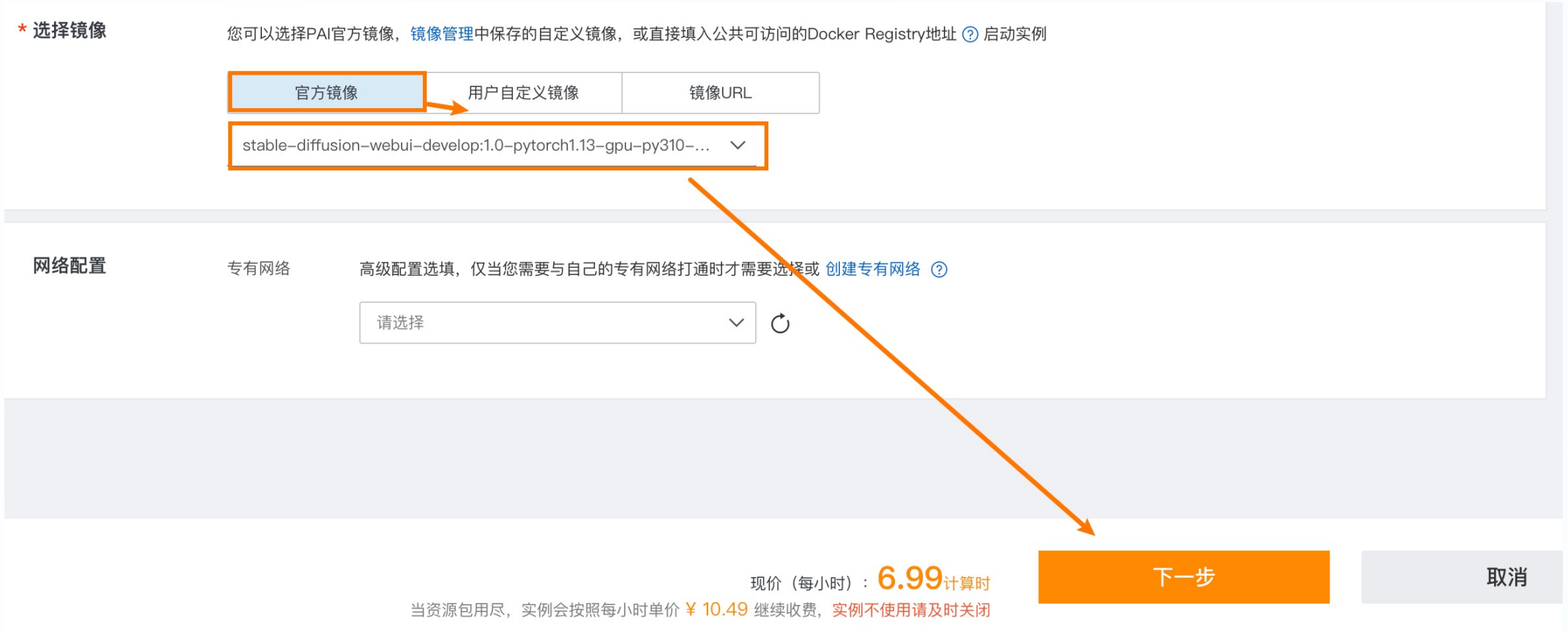
⊕ **共享数据集**

工作目录

工作目录是jupyterlab, webide的启动路径，挂载至/mnt/workspace

系统盘 – /mnt/systemdisk

创建DSW实例-环境配置



点击下一步，构建环境，大约需要5-15分钟的时间进行构建。

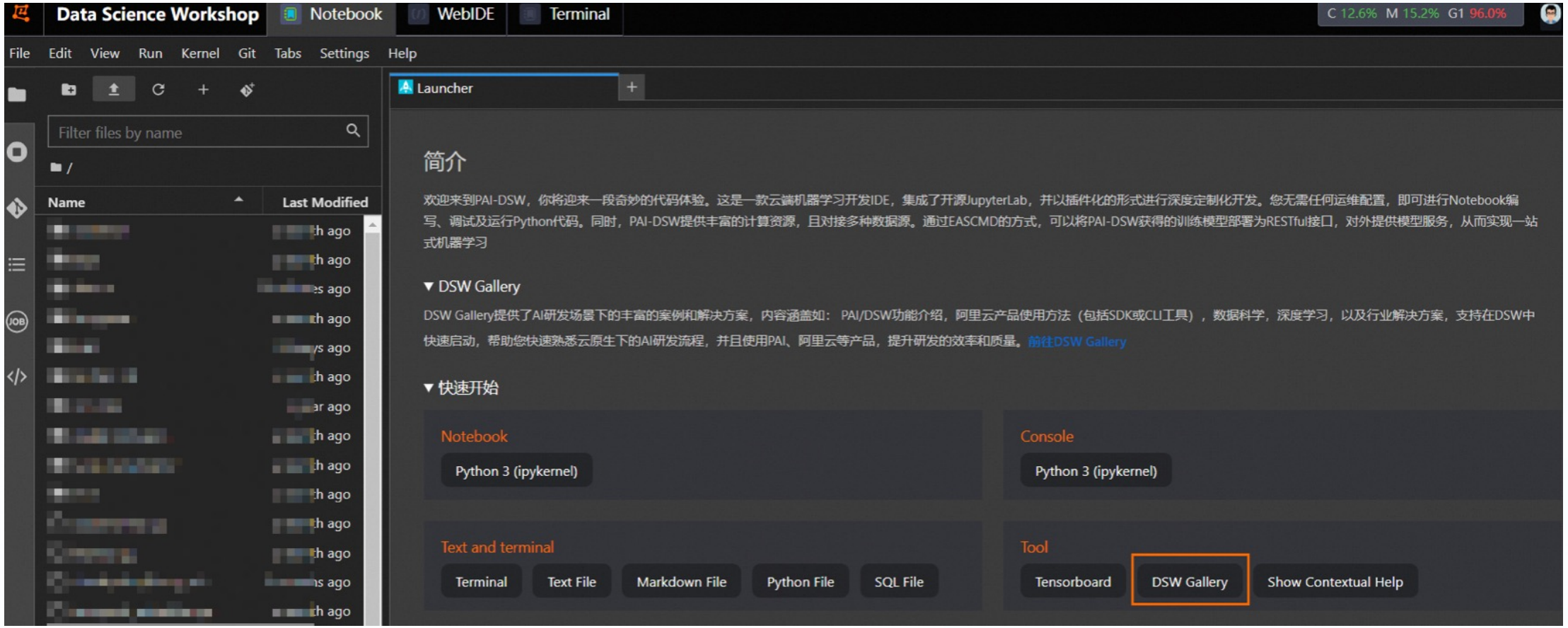
创建DSW实例-启动实例



启动实例后即可进行虚拟试衣任务的开发。

打开DSW Gallery

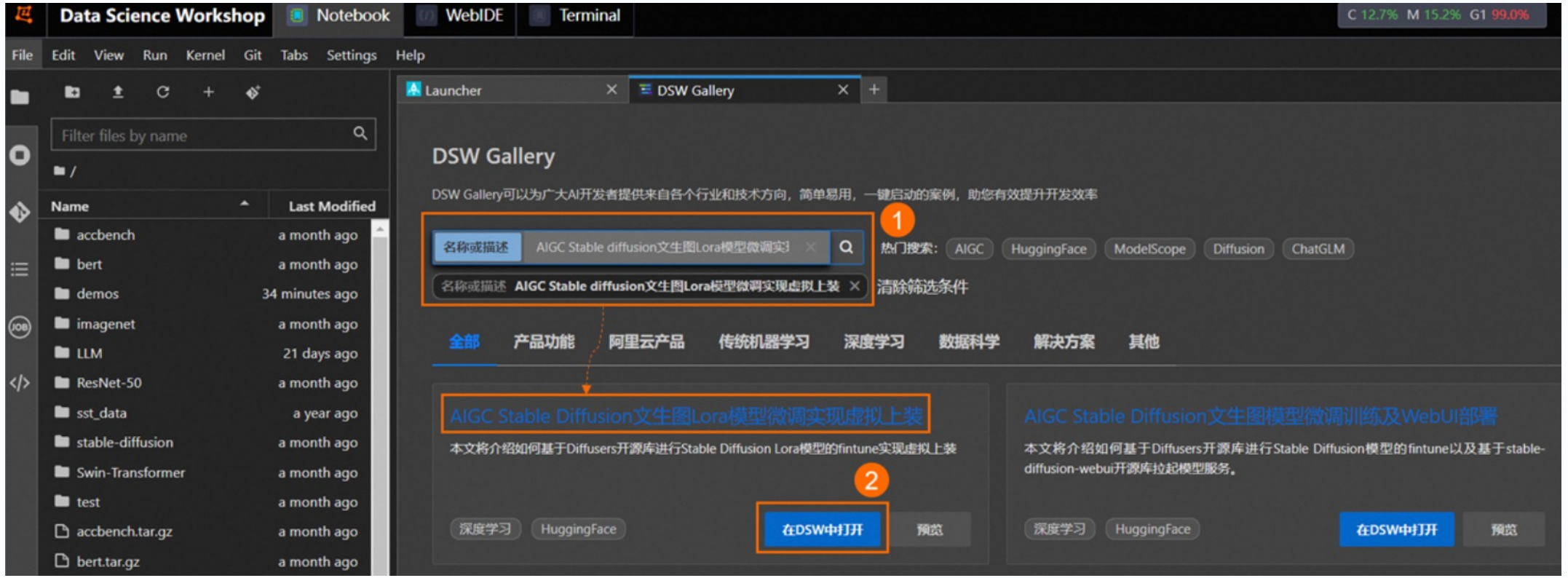
在**Notebook**页签的**Launcher**页面，单击**快速开始**区域**Tool**下的DSW Gallery，打开DSW Gallery页面。



下载教程文件

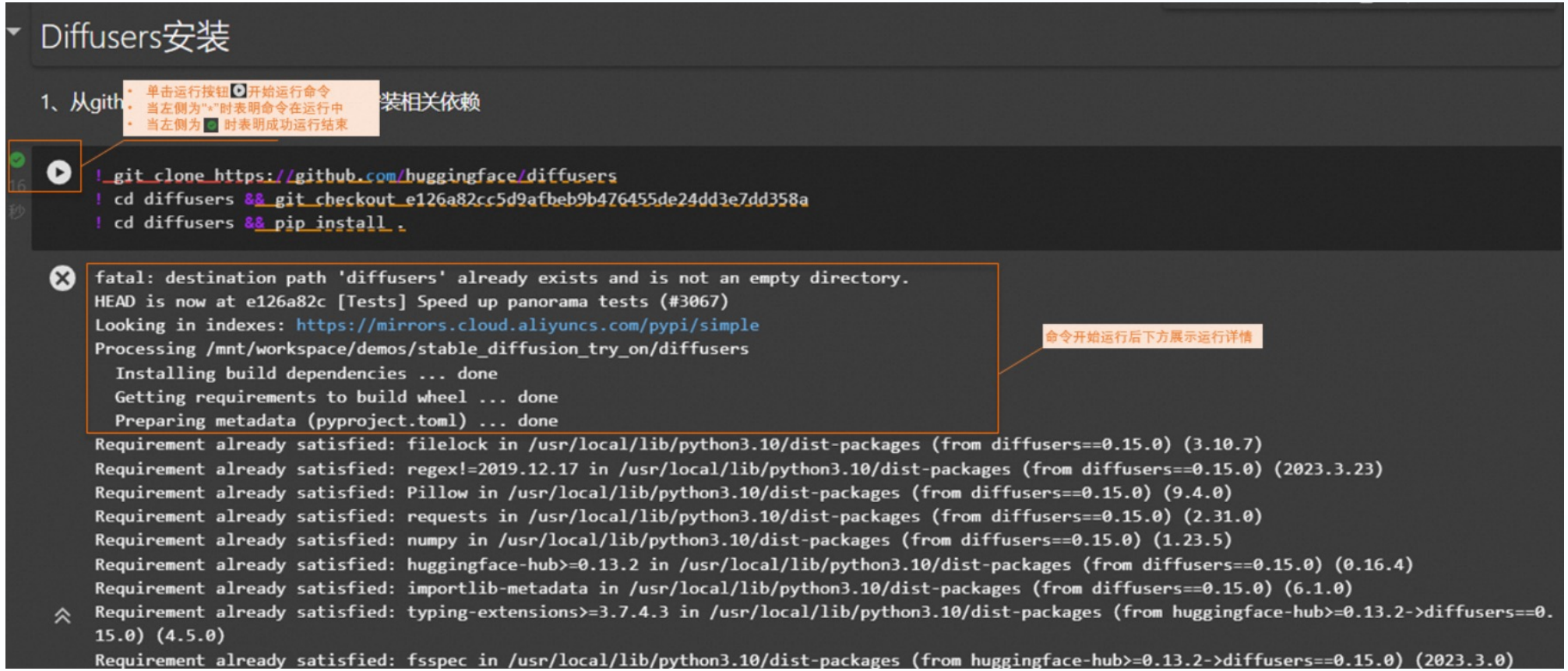
在DSW Gallery页面中，搜索并找到**AIGC Stable diffusion文生图Lora模型微调实现虚拟上装**教程，单击教程卡片中的**在DSW中打开**。

单击后即会自动将本教程所需的资源和教程文件下载至DSW实例中，并在下载完成后自动打开教程文件。



运行教程文件

在打开的教程文件**stable_diffusion_try_on.ipynb**文件中，您可以直接看到教程文本，您可以在教程文件中直接运行对应的步骤的命令，当成功运行结束一个步骤命令后，再顺次运行下个步骤的命令。



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02

Diffusers安装

安装方法

```
! pip install -U http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com/EasyCV/datasets/diffusers-0.22.0.dev0-py3-none-any.whl
```

运行结果

```
Looking in indexes: https://mirrors.cloud.aliyuncs.com/pypi/simp
Collecting diffusers==0.22.0.dev0
  Downloading http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyu
 [2K     [90m━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━[0m
 [?25hRequirement already satisfied: huggingface-hub>=0.13.2 in
Collecting safetensors>=0.3.1
  Downloading https://mirrors.cloud.aliyuncs.com/pypi/packages/3
 [2K     [90m━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━[0m
 [?25hRequirement already satisfied: requests in /usr/local/lib/
Requirement already satisfied: filelock in /usr/local/lib/pythor
Requirement already satisfied: importlib-metadata in /usr/local/
Requirement already satisfied: regex!=2019.12.17 in /usr/local/l
Requirement already satisfied: numpy in /usr/local/lib/python3.1
Requirement already satisfied: Pillow in /usr/local/lib/python3.
Requirement already satisfied: typing-extensions>=3.7.4.3 in /us
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/pyt
Requirement already satisfied: packaging>=20.9 in /usr/local/lib
```

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03

配置accelerate

配置方法

可以直接运行命令下载默认配置文件，若需要自定义配置则在Terminal中执行命令：accelerate config，并根据DSW实例详情，选择对应配置

```
! mkdir -p /root/.cache/huggingface/accelerate/
! wget -c http://pai-vision-data-sh.oss-cn-shanghai.aliyuncs.com/aigc-data/accelerate/default_config.yaml -O /root/.cache/huggingface/accelerate/default_config.yaml
```

运行结果

```
--2024-01-23 07:40:15--  http://pai-vision-data-sh.oss-cn-shangh
Resolving pai-vision-data-sh.oss-cn-shanghai.aliyuncs.com (pai-v
Connecting to pai-vision-data-sh.oss-cn-shanghai.aliyuncs.com (p
HTTP request sent, awaiting response... 200 OK
Length: 306 [application/octet-stream]
Saving to: '/root/.cache/huggingface/accelerate/default_config.y

/root/.cache/huggin 100%[===================>]     306  --.-KB/s

2024-01-23 07:40:15 (135 MB/s) - '/root/.cache/huggingface/accel
```

04

下载stable-diffusion-webui开源库

下载方法

为了提升下载速度，本示例在OSS上缓存了代码包,直接执行如下命令即可完成下载，若需更新最新版本，也可前往开源链接进行下载：

- stable-diffusion-webui
- stablediffusion
- taming-transformers
- k-diffusion
- CodeFormer
- blip

下载方法

```
import os
! apt update
! apt install -y aria2 def aria2(url, filename, d):
!aria2c --console-log-level=error -c -x 16 -s 16 {url} -o {filename} -d {d} url_prefix
= { "cn-shanghai": "http://pai-vision-data-sh.oss-cn-shanghai-
internal.aliyuncs.com", "cn-hangzhou": "http://pai-vision-data-hz2.oss-cn-
hangzhou-internal.aliyuncs.com", "cn-shenzhen": "http://pai-vision-data-
sz.oss-cn-shenzhen-internal.aliyuncs.com", "cn-beijing": "http://pai-vision-
data-bj.oss-cn-beijing-internal.aliyuncs.com", "ap-southeast-1": "http://pai-
vision-data-ap-southeast.oss-ap-southeast-1-internal.aliyuncs.com" }
dsw_region = os.environ.get("dsw_region") prefix = url_prefix[dsw_region] if
dsw_region in url_prefix else "http://pai-vision-data-sh.oss-cn-
shanghai.aliyuncs.com" webui_url = f"{prefix}/aigc-data/code/stable-diffusion-
webui-v1.tar.gz" aria2(webui_url, webui_url.split("/")[-1], "./")
```

输出结果

```
Preparing to unpack .../aria2_1.36.0-1_amd64.deb ...
 7 [24;0f [42m [30mProgress: [ 41%] [49m [39m [############
 7 [24;0f [42m [30mProgress: [ 47%] [49m [39m [############
 7 [24;0f [42m [30mProgress: [ 53%] [49m [39m [############
 7 [24;0f [42m [30mProgress: [ 65%] [49m [39m [############
 7 [24;0f [42m [30mProgress: [ 76%] [49m [39m [############
 7 [24;0f [42m [30mProgress: [ 88%] [49m [39m [############

 [35m[ [0m#a8e83c 3.1GiB/3.1GiB [36m(99%) [0m CN:1 DL: [32m
Download Results:
gid   |stat|avg speed  |path/URI
======+====+===========+=================================
a8e83c| [1;32mOK [0m  |   464MiB/s|.//stable-diffusion-web

Status Legend:
(OK):download completed.
```

下载完成后进行配置

```
! tar -xf stable-diffusion-webui-v1.tar.gz
! cd stable-diffusion-webui && wget -c http://pai-vision-data-sh.oss-cn-shanghai.aliyuncs.com/aigc-data/webui_config/config_tryon.json -O config.json
```

运行结果为

```
Resolving pai-vision-data-sh.oss-cn-shanghai.aliyuncs.com (pai-v
Connecting to pai-vision-data-sh.oss-cn-shanghai.aliyuncs.com (p
HTTP request sent, awaiting response... 200 OK
Length: 7685 (7.5K) [application/json]
Saving to: ‘config.json’

config.json          100%[====================>]   7.50K  --.-KB/s

2024-01-23 07:41:42 (1.20 GB/s) - ‘config.json’ saved [7685/7685
```

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05

SD+LORA模型微调

1.准备数据集及训练代码

我们提供了训练代码及一个小的示例数据，可以参照该格式准备自定义数据

```
! wget -c http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com/EasyCV/datasets/try_on/cloth_train_example.tar.gz && tar -xvf cloth_train_example.tar.gz
! wget -c http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com/EasyCV/datasets/try_on/train_text_to_image_lora_v2.py
```

1.准备数据集及训练代码

输出结果为：

```
cloth_train_example/
cloth_train_example/train/
cloth_train_example/train/20230407174322.jpg
cloth_train_example/train/metadata.jsonl
cloth_train_example/train/20230407174421.jpg
cloth_train_example/train/20230407174403.jpg
cloth_train_example/train/20230407174429.jpg
cloth_train_example/train/20230407174311.jpg
cloth_train_example/train/20230407174332.jpg
cloth_train_example/train/20230407174450.jpg
cloth_train_example/train/.ipynb_checkpoints/
cloth_train_example/train/.ipynb_checkpoints/20230407174332-checkpoint.jpg
cloth_train_example/train/20230407174343.jpg
cloth_train_example/train/20230407174354.jpg
cloth_train_example/train/20230407174413.jpg
cloth_train_example/train/20230407174439.jpg
cloth_train_example/.ipynb_checkpoints/
```

2.查看示例图片

```
from PIL import Image
display(Image.open("cloth_train_example/train/20230407174450.jpg"))
```



3.下载预训练模型并转化成diffusers格式

```
safety_checker_url = f"{prefix}/aigc-data/hug_model/models--CompVis--stable-diffusion-safety-checker.tar.gz" aria2(safety_checker_url, safety_checker_url.split("/")[-1], "./")
! tar -xf models--CompVis--stable-diffusion-safety-checker.tar.gz -C /root/.cache/huggingface/hub/ clip_url = f"{prefix}/aigc-data/hug_model/models--openai--clip-vit-large-patch14.tar.gz" aria2(clip_url, clip_url.split("/")[-1], "./")
! tar -xf models--openai--clip-vit-large-patch14.tar.gz -C /root/.cache/huggingface/hub/ model_url = f"{prefix}/aigc-data/sd_models/chilloutmix_NiPrunedFp32Fix.safetensors" aria2(model_url, model_url.split("/")[-1], "stable-diffusion-webui/models/Stable-diffusion/")
! wget -c http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com/EasyCV/datasets/convert_original_stable_diffusion_to_diffusers.py ! python convert_original_stable_diffusion_to_diffusers.py \ --checkpoint_path=stable-diffusion-webui/models/Stable-diffusion/chilloutmix_NiPrunedFp32Fix.safetensors \ --dump_path=chilloutmix-ni --from_safetensors
```

3.下载预训练模型并转化成diffusers格式

```
Status Legend:
(OK):download completed.
[#e0974b 3.9GiB/3.9GiB(99%) CN:4 DL:169MiB]m0m]m
Download Results:
gid   |stat|avg speed  |path/URI
======+====+===========+=======================================================
e0974b|OK  |   166MiB/s|stable-diffusion-webui/models/Stable-diffusion//chilloutmi

Status Legend:
(OK):download completed.
global_step key not found in model
Some weights of the model checkpoint at openai/clip-vit-large-patch14 were not use
- This IS expected if you are initializing CLIPTextModel from the checkpoint of a
- This IS NOT expected if you are initializing CLIPTextModel from the checkpoint c
```

4.模型训练

```
! export MODEL_NAME="chilloutmix-ni" && \
export DATASET_NAME="cloth_train_example" && \
accelerate launch
      --mixed_precision="fp16" train_text_to_image_lora_v2.py \
      --pretrained_model_name_or_path=$MODEL_NAME \
      --train_data_dir=$DATASET_NAME
      --caption_column="text" \
      --width=640 --height=768 --random_flip \
      --train_batch_size=1 \
      --num_train_epochs=200  --checkpointing_steps=5000 \
      --learning_rate=1e-04 --lr_scheduler="constant" -lr_warmup_steps=0 \
      --seed=42 \
      --output_dir="cloth-model-lora" \
      --validation_prompt="cloth1" --validation_epochs=100 --rank=128
```

4.模型训练结果为

```
  0%|          | 0/30 [00:00<?, ?it/s]
  3%|▉         | 1/30 [00:00<00:05, 5.74it/s]
 10%|██▉       | 3/30 [00:00<00:03, 9.00it/s]
 17%|████▉     | 5/30 [00:00<00:02, 10.02it/s]
 23%|██████▉   | 7/30 [00:00<00:02, 10.50it/s]
 30%|████████▉ | 9/30 [00:00<00:01, 10.75it/s]
 37%|██████████| 11/30 [00:01<00:01, 10.86it/s]
 43%|████████████| 13/30 [00:01<00:01, 10.98it/s]
 50%|██████████████| 15/30 [00:01<00:01, 11.06it/s]
 57%|████████████████| 17/30 [00:01<00:01, 11.11it/s]
 63%|██████████████████| 19/30 [00:01<00:00, 11.14it/s]
 70%|████████████████████| 21/30 [00:01<00:00, 11.13it/s]
 77%|██████████████████████| 23/30 [00:02<00:00, 11.14it/s]
 83%|████████████████████████| 25/30 [00:02<00:00, 11.15it/s]
 90%|██████████████████████████| 27/30 [00:02<00:00, 11.17it/s]
100%|████████████████████████████| 30/30 [00:02<00:00, 10.85it/s]
Steps: 100%|▉| 2200/2200 [16:58<00:00, 2.16it/s, lr=0.0001, step_loss=0.38]
```

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06

模型部署

1.Lora模型

将lora模型转化成WebUI支持格式并拷贝到WebUI所在目录

```
! wget -c http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com/EasyCV/datasets/convert-to-safetensors_v2.py
! python convert-to-safetensors_v2.py --file='cloth-model-lora/pytorch_lora_weights.safetensors’
 ! mkdir -p stable-diffusion-webui/models/Lora
 ! cp cloth-model-lora/pytorch_lora_weights_converted.safetensors stable-diffusion-webui/models/Lora/cloth_lora_weights.safetensors
```

1.Lora模型运行结果

```
--2023-09-11 02:30:23--  http://pai-vision-data-hz.oss-cn-zhangjiakou.aliyu
Resolving pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com (pai-vision-da
Connecting to pai-vision-data-hz.oss-cn-zhangjiakou.aliyuncs.com (pai-visio
HTTP request sent, awaiting response... 200 OK
Length: 2032 (2.0K) [application/octet-stream]
Saving to: 'convert-to-safetensors.py'

convert-to-safetens 100%[===================>]   1.98K  --.-KB/s    in 0s

2023-09-11 02:30:23 (760 MB/s) - 'convert-to-safetensors.py' saved [2032/20

device is cuda
Saving cloth-model-lora/pytorch_lora_weights_converted.safetensors
```

2.额外模型文件

为了加速下载在oss做了缓存，可以运行如下命令直接下载

```
embedding_url = f"{prefix}/aigc-data/embedding/ng_deepnegative_v1_75t.pt"
aria2(embedding_url, embedding_url.split("/")[-1], "stable-diffusion-
webui/embeddings/")

model_lora_url = f"{prefix}/aigc-
data/lora/koreanDollLikeness_v10.safetensors"
aria2(model_lora_url, model_lora_url.split("/")[-1], "stable-diffusion-
webui/models/Lora/")

bert_url = f"{prefix}/aigc-data/hug_model/models--bert-base-uncased.tar.gz"
aria2(bert_url, bert_url.split("/")[-1], "~/.cache/huggingface/hub") ! cd
~/.cache/huggingface/hub && tar -xvf models--bert-base-uncased.tar.gz
```

2.额外模型文件输出结果

```
Download Results:
gid   |stat|avg speed  |path/URI
======+====+===========+=======================================================
60d640|OK  |    16MiB/s|stable-diffusion-webui/embeddings//ng_deepnegative_v1_75

Status Legend:
(OK):download completed.
[#653c40 144MiB/144MiB(99%) CN:1 DL:37MiB]m]
Download Results:
gid   |stat|avg speed  |path/URI
======+====+===========+=======================================================
653c40|OK  |    37MiB/s|stable-diffusion-webui/models/Lora//koreanDollLikeness_v

Status Legend:
(OK):download completed.
```

3.在DSW中启动WebUI

```
! cd stable-diffusion-webui && python launch.py --no-half-vae --xformers
```

输出结果为：

```
Python 3.10.6 (main, Mar 10 2023, 10:55:28) [GCC 11.3.0]
Commit hash: a9fed7c364061ae6efb37f797b6b522cb3cf7aa2
Installing requirements for Web UI
Launching Web UI with arguments: --no-download-sd-model --xformers -
Tag Autocomplete: Could not locate model-keyword extension, Lora tri
Checkpoint chilloutmix_NiPrunedFp32Fix.safetensors [fc2511737a] not
Calculating sha256 for /mnt/workspace/demos/stable_diffusion_try_on/
Loading weights [fc2511737a] from /mnt/workspace/demos/stable_diffus
Creating model from config: /mnt/workspace/demos/stable_diffusion_tr
LatentDiffusion: Running in eps-prediction mode
DiffusionWrapper has 859.52 M params.
Applying xformers cross attention optimization.
Textual inversion embeddings loaded(1): ng_deepnegative_v1_75t
Model loaded in 25.2s (calculate hash: 23.0s, create model: 0.4s, ap
Running on local URL:  http://127.0.0.1:7860

To create a public link, set `share=True` in `launch()`.
```

由于Github访问存在不稳定性，如果运行后未出现正常返回结果且提示网络相关原因，例如：Network is unreachable、unable to access 'https://github.com/.....'，可以重新运行命令。

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07

推理验证

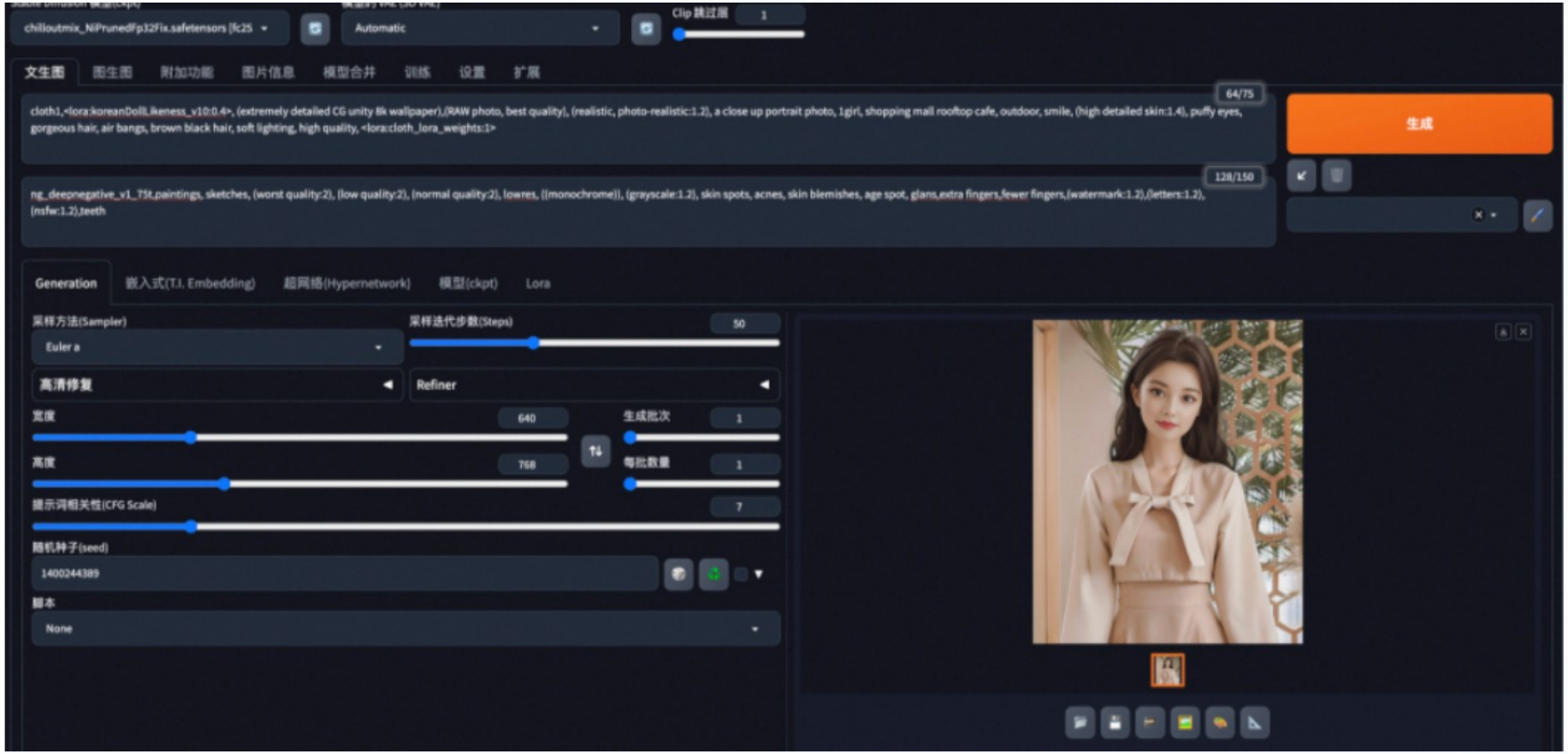
在WebUI页签配置以下参数

- **Prompt**：cloth1,<lora:koreanDollLikeness_v10:0.4>, (extremely detailed CG unity 8k wallpaper),(RAW photo, best quality), (realistic, photo-realistic:1.2), a close up portrait photo, 1girl, shopping mall rooftop cafe, outdoor, smile, (high detailed skin:1.4), puffy eyes, gorgeous hair, air bangs, brown black hair, soft lighting, high quality,<lora:cloth_lora_weights:1>
- **Negative prompt**：ng_deepnegative_v1_75t,paintings, sketches, (worst quality:2), (low quality:2), (normal quality:2), lowres, ((monochrome)), (grayscale:1.2), skin spots, acnes, skin blemishes, age spot, glans,extra fingers,fewer fingers,(watermark:1.2),(letters:1.2),(nsfw:1.2),teeth

在WebUI页签配置以下参数

- **采样方法（Sampler）：** Euler a
- **采样迭代步数（Steps）：** 50
- **宽度**和**高度：** 640，768
- **随机种子（seed）：** 1400244389
- **提示词相关性（CFG Scale）：** 7
- 选中codeformer面部修复复选框

点击生成：


chilloutmix_NiPrunedFp32Fix.safetensors [fc25
Automatic
Clip 跳过层
1
文生图
图生图
附加功能
图片信息
模型合并
训练
设置
扩展
64/75
cloth1,<lora:koreanDoll_likeness_v10:0.4>, (extremely detailed CG unity 8k wallpaper),(RAW photo, best quality), (realistic, photo-realistic:1.2), a close up portrait photo, 1girl, shopping mall rooftop cafe, outdoor, smile, (high detailed skin:1.4), puffy eyes, gorgeous hair, air bangs, brown black hair, soft lighting, high quality, <lora:cloth_lora_weights:1>
生成
128/150
ng_deepnegative_v1_75t,paintings, sketches, (worst quality:2), (low quality:2), (normal quality:2), lowres, ((monochrome)), (grayscale:1.2), skin spots, acnes, skin blemishes, age spot, glans,extra fingers,fewer fingers,(watermark:1.2),(letters:1.2), (nsfw:1.2),teeth
Generation
嵌入式(T.I. Embedding)
超网络(Hypernetwork)
模型(ckpt)
Lora
采样方法(Sampler)
Euler a
采样迭代步数(Steps)
50
高清修复
Refiner
宽度
640
生成批次
1
高度
768
每批数量
1
提示词相关性(CFG Scale)
7
随机种子(seed)
1400244389
脚本
None

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