

```
!pip install diffusers --upgrade
```

```
Requirement already satisfied: diffusers in /usr/local/lib/python3.11/dist-packages (0.33.1)
Requirement already satisfied: importlib-metadata in /usr/local/lib/python3.11/dist-packages (from diffusers) (8.6.1)
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from diffusers) (3.18.0)
Requirement already satisfied: huggingface-hub>=0.27.0 in /usr/local/lib/python3.11/dist-packages (from diffusers) (0.30.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages (from diffusers) (2.0.2)
Requirement already satisfied: regex!=2019.12.17 in /usr/local/lib/python3.11/dist-packages (from diffusers) (2024.11.6)
Requirement already satisfied: requests in /usr/local/lib/python3.11/dist-packages (from diffusers) (2.32.3)
Requirement already satisfied: safetensors>=0.3.1 in /usr/local/lib/python3.11/dist-packages (from diffusers) (0.5.3)
Requirement already satisfied: Pillow in /usr/local/lib/python3.11/dist-packages (from diffusers) (11.1.0)
Requirement already satisfied: fsspec>=2023.5.0 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.27.0->diffusers)
Requirement already satisfied: packaging>=20.9 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.27.0->diffusers)
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.27.0->diffusers) (6.0.2)
Requirement already satisfied: tqdm>=4.42.1 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.27.0->diffusers) (4.67.1)
Requirement already satisfied: typing-extensions>=3.7.4.3 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub>=0.27.0->diffusers) (4.12.0)
Requirement already satisfied: zipp>=3.20 in /usr/local/lib/python3.11/dist-packages (from importlib-metadata->diffusers) (3.21.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests->diffusers) (3.4.1)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-packages (from requests->diffusers) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.11/dist-packages (from requests->diffusers) (2.3.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.11/dist-packages (from requests->diffusers) (2025.1.31)
```

```
pip install invisible_watermark transformers accelerate safetensors
```

```
Requirement already satisfied: invisible_watermark in /usr/local/lib/python3.11/dist-packages (0.2.0)
Requirement already satisfied: transformers in /usr/local/lib/python3.11/dist-packages (4.51.1)
Requirement already satisfied: accelerate in /usr/local/lib/python3.11/dist-packages (1.5.2)
Requirement already satisfied: safetensors in /usr/local/lib/python3.11/dist-packages (0.5.3)
Requirement already satisfied: Pillow>=6.0.0 in /usr/local/lib/python3.11/dist-packages (from invisible_watermark) (11.1.0)
Requirement already satisfied: PyWavelets>=1.1.1 in /usr/local/lib/python3.11/dist-packages (from invisible_watermark) (1.8.0)
Requirement already satisfied: numpy>=1.17.0 in /usr/local/lib/python3.11/dist-packages (from invisible_watermark) (2.0.2)
Requirement already satisfied: opencv-python>=4.1.0.25 in /usr/local/lib/python3.11/dist-packages (from invisible_watermark) (4.11.6)
Requirement already satisfied: torch in /usr/local/lib/python3.11/dist-packages (from invisible_watermark) (2.6.0+cu124)
Requirement already satisfied: filelock in /usr/local/lib/python3.11/dist-packages (from transformers) (3.18.0)
Requirement already satisfied: huggingface-hub<1.0,>=0.30.0 in /usr/local/lib/python3.11/dist-packages (from transformers) (0.30.2)
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Requirement already satisfied: tokenizers<0.22,>=0.21 in /usr/local/lib/python3.11/dist-packages (from transformers) (0.21.1)
Requirement already satisfied: tqdm>=4.27 in /usr/local/lib/python3.11/dist-packages (from transformers) (4.67.1)
Requirement already satisfied: psutil in /usr/local/lib/python3.11/dist-packages (from accelerate) (5.9.5)
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Requirement already satisfied: typing-extensions>=3.7.4.3 in /usr/local/lib/python3.11/dist-packages (from huggingface-hub<1.0,>=0.30.0->transformers)
Requirement already satisfied: networkx in /usr/local/lib/python3.11/dist-packages (from torch->invisible_watermark) (3.4.2)
Requirement already satisfied: jinja2 in /usr/local/lib/python3.11/dist-packages (from torch->invisible_watermark) (3.1.6)
Requirement already satisfied: nvidia-cuda-nvrtc-cu12==12.4.127 in /usr/local/lib/python3.11/dist-packages (from torch->invisible_watermark)
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Requirement already satisfied: nvidia-nvtx-cu12==12.4.127 in /usr/local/lib/python3.11/dist-packages (from torch->invisible_watermark)
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Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.11/dist-packages (from torch->invisible_watermark) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/python3.11/dist-packages (from sympy==1.13.1->torch->invisible_watermark)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests->transformers) (3.4.1)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-packages (from requests->transformers) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.11/dist-packages (from requests->transformers) (2.3.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.11/dist-packages (from requests->transformers) (2025.1.31)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.11/dist-packages (from jinja2->torch->invisible_watermark)
```

```
from diffusers import DiffusionPipeline
import torch
```

```
pipe = DiffusionPipeline.from_pretrained("stabilityai/stable-diffusion-xl-base-1.0", torch_dtype=torch.float16, use_safetensors=True, var
pipe.to("cuda")
```

```
# if using torch < 2.0
# pipe.enable_xformers_memory_efficient_attention()
```

```
prompt = "White cat and her kittens playing with wool"
```

```
images = pipe(prompt=prompt).images[0]
```

```

/usr/local/lib/python3.11/dist-packages/huggingface_hub/utils/_auth.py:94: UserWarning:
The secret `HF_TOKEN` does not exist in your Colab secrets.
To authenticate with the Hugging Face Hub, create a token in your settings tab (https://huggingface.co/settings/tokens), set it as :
You will be able to reuse this secret in all of your notebooks.
Please note that authentication is recommended but still optional to access public models or datasets.
  warnings.warn(
model_index.json: 100%                               609/609 [00:00<00:00, 66.9kB/s]

Fetching 19 files: 100%                               19/19 [00:56<00:00, 3.83s/it]

Xet Storage is enabled for this repo, but the 'hf_xet' package is not installed. Falling back to regular HTTP download. For better p
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scheduler_config.json: 100%                           479/479 [00:00<00:00, 49.1kB/s]

config.json: 100%                                     565/565 [00:00<00:00, 10.0kB/s]

tokenizer_config.json: 100%                           737/737 [00:00<00:00, 13.3kB/s]

special_tokens_map.json: 100%                         472/472 [00:00<00:00, 5.06kB/s]

config.json: 100%                                     575/575 [00:00<00:00, 7.01kB/s]

merges.txt: 100%                                      525k/525k [00:00<00:00, 2.77MB/s]

model.fp16.safetensors: 100%                         246M/246M [00:05<00:00, 27.9MB/s]

vocab.json: 100%                                     1.06M/1.06M [00:00<00:00, 7.37MB/s]

model.fp16.safetensors: 100%                         1.39G/1.39G [00:16<00:00, 150MB/s]

special_tokens_map.json: 100%                        460/460 [00:00<00:00, 29.1kB/s]

tokenizer_config.json: 100%                          725/725 [00:00<00:00, 45.1kB/s]

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config.json: 100%                                     1.68k/1.68k [00:00<00:00, 65.4kB/s]

config.json: 100%                                     642/642 [00:00<00:00, 17.4kB/s]

diffusion_pytorch_model.fp16.safetensors: 100%       167M/167M [00:05<00:00, 24.8MB/s]

diffusion_pytorch_model.fp16.safetensors: 100%       5.14G/5.14G [00:55<00:00, 143MB/s]

diffusion_pytorch_model.fp16.safetensors: 100%       167M/167M [00:05<00:00, 23.4MB/s]

Loading pipeline components...: 100%                  7/7 [00:04<00:00, 1.84it/s]

100%                                                  50/50 [00:37<00:00, 1.35it/s]

```

images



```
!pip install gradio
```



```

Requirement already satisfied: click>=0.0.0 in /usr/local/lib/python3.11/dist-packages (from typer<1.0,>=0.12->gradio) (0.1.0)
Requirement already satisfied: shellingham>=1.3.0 in /usr/local/lib/python3.11/dist-packages (from typer<1.0,>=0.12->gradio) (1.5)
Requirement already satisfied: rich>=10.11.0 in /usr/local/lib/python3.11/dist-packages (from typer<1.0,>=0.12->gradio) (13.9.4)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.11/dist-packages (from python-dateutil>=2.8.2->pandas<3.0,>=1.0)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.11/dist-packages (from rich>=10.11.0->typer<1.0,>=
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Downloading gradio-5.25.2-py3-none-any.whl (46.9 MB)
46.9/46.9 MB 21.7 MB/s eta 0:00:00
Downloading gradio_client-1.8.0-py3-none-any.whl (322 kB)
322.2/322.2 kB 25.8 MB/s eta 0:00:00
Downloading aiofiles-24.1.0-py3-none-any.whl (15 kB)
Downloading fastapi-0.115.12-py3-none-any.whl (95 kB)
95.2/95.2 kB 9.2 MB/s eta 0:00:00
Downloading groovy-0.1.2-py3-none-any.whl (14 kB)
Downloading python_multipart-0.0.20-py3-none-any.whl (24 kB)
Downloading ruff-0.11.5-py3-none-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (11.4 MB)
11.4/11.4 MB 117.3 MB/s eta 0:00:00
Downloading safehttpx-0.1.6-py3-none-any.whl (8.7 kB)
Downloading semantic_version-2.10.0-py2.py3-none-any.whl (15 kB)
Downloading starlette-0.46.2-py3-none-any.whl (72 kB)
72.0/72.0 kB 7.3 MB/s eta 0:00:00
Downloading tomlkit-0.13.2-py3-none-any.whl (37 kB)
Downloading uvicorn-0.34.1-py3-none-any.whl (62 kB)
62.4/62.4 kB 6.2 MB/s eta 0:00:00
Downloading ffmpeg-0.5.0-py3-none-any.whl (6.0 kB)
Downloading pydub-0.25.1-py2.py3-none-any.whl (32 kB)
Installing collected packages: pydub, uvicorn, tomlkit, semantic-version, ruff, python-multipart, groovy, ffmpeg, aiofiles, starle
Successfully installed aiofiles-24.1.0 fastapi-0.115.12 ffmpeg-0.5.0 gradio-5.25.2 gradio-client-1.8.0 groovy-0.1.2 pydub-0.25.1 p

```

```

import gradio as gr
from diffusers import StableDiffusionPipeline, EulerDiscreteScheduler
import torch


model_id = "stabilityai/stable-diffusion-2-1-base"

scheduler = EulerDiscreteScheduler.from_pretrained(model_id, subfolder="scheduler")
pipe = StableDiffusionPipeline.from_pretrained(model_id, scheduler=scheduler, torch_dtype=torch.float16)
pipe = pipe.to("cuda")

def generated_image(prompt):
    image = pipe(prompt).images[0]
    return image

gr.Interface(
    fn=generated_image,
    inputs=gr.Textbox(label="Enter your prompt"),
    outputs=gr.Image(type="pil"),
    title="Stable Diffusion 2.1 - IMAGE GENERATOR APP",
    description="Enter text prompt and see the generated image"
).launch()

```

 scheduler_config.json: 100% 346/346 [00:00<00:00, 21.5kB/s]

model_index.json: 100% 543/543 [00:00<00:00, 42.8kB/s]

Fetching 12 files: 100% 12/12 [00:32<00:00, 3.27s/it]

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WARNING:huggingface_hub.file_download:Xet Storage is enabled for this repo, but the 'hf_xet' package is not installed. Falling back to regular HTTP download. For better performance, install the 'hf_xet' package.

config.json: 100% 613/613 [00:00<00:00, 9.61kB/s]

vocab.json: 100% 1.06M/1.06M [00:00<00:00, 5.06MB/s]

merges.txt: 100% 525k/525k [00:00<00:00, 2.86MB/s]

preprocessor_config.json: 100% 342/342 [00:00<00:00, 3.25kB/s]

tokenizer_config.json: 100% 807/807 [00:00<00:00, 8.59kB/s]

config.json: 100% 911/911 [00:00<00:00, 11.1kB/s]

special_tokens_map.json: 100% 460/460 [00:00<00:00, 4.16kB/s]

model.safetensors: 100% 1.36G/1.36G [00:13<00:00, 129MB/s]

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WARNING:huggingface_hub.file_download:Xet Storage is enabled for this repo, but the 'hf_xet' package is not installed. Falling back to regular HTTP download. For better performance, install the 'hf_xet' package.

config.json: 100% 553/553 [00:00<00:00, 9.27kB/s]

diffusion_pytorch_model.safetensors: 100% 335M/335M [00:04<00:00, 62.9MB/s]

diffusion_pytorch_model.safetensors: 100% 3.46G/3.46G [00:31<00:00, 224MB/s]

Loading pipeline components...: 100% 6/6 [00:27<00:00, 6.18s/it]