

```
# Installing required libraries
```

```
!pip install diffusers transformers accelerate scipy ftfy Pillow
```

```
Requirement already satisfied: diffusers in /usr/local/lib/python3.10/dist-packages (0.32.1)
Requirement already satisfied: transformers in /usr/local/lib/python3.10/dist-packages (4.47.1)
Requirement already satisfied: accelerate in /usr/local/lib/python3.10/dist-packages (1.2.1)
Requirement already satisfied: scipy in /usr/local/lib/python3.10/dist-packages (1.13.1)
Requirement already satisfied: ftfy in /usr/local/lib/python3.10/dist-packages (6.3.1)
Requirement already satisfied: Pillow in /usr/local/lib/python3.10/dist-packages (11.0.0)
Requirement already satisfied: importlib-metadata in /usr/local/lib/python3.10/dist-packages (from diffusers) (8.5.0)
Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from diffusers) (3.16.1)
Requirement already satisfied: huggingface-hub>=0.23.2 in /usr/local/lib/python3.10/dist-packages (from diffusers) (0.27.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (from diffusers) (1.26.4)
Requirement already satisfied: regex!=2019.12.17 in /usr/local/lib/python3.10/dist-packages (from diffusers) (2024.11.6)
Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from diffusers) (2.32.3)
Requirement already satisfied: safetensors>=0.3.1 in /usr/local/lib/python3.10/dist-packages (from diffusers) (0.4.5)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from transformers) (24.2)
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.10/dist-packages (from transformers) (6.0.2)
Requirement already satisfied: tokenizers<0.22,>=0.21 in /usr/local/lib/python3.10/dist-packages (from transformers) (0.21.0)
Requirement already satisfied: tqdm>=4.27 in /usr/local/lib/python3.10/dist-packages (from transformers) (4.67.1)
Requirement already satisfied: psutil in /usr/local/lib/python3.10/dist-packages (from accelerate) (5.9.5)
Requirement already satisfied: torch>=1.10.0 in /usr/local/lib/python3.10/dist-packages (from accelerate) (2.5.1+cu121)
Requirement already satisfied: wcwidth in /usr/local/lib/python3.10/dist-packages (from ftfy) (0.2.13)
Requirement already satisfied: fsspec>=2023.5.0 in /usr/local/lib/python3.10/dist-packages (from huggingface-hub>=0.23.2->diffusers)
Requirement already satisfied: typing-extensions>=3.7.4.3 in /usr/local/lib/python3.10/dist-packages (from huggingface-hub>=0.23.2->diffusers)
Requirement already satisfied: networkx in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate) (3.4.2)
Requirement already satisfied: Jinja2 in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate) (3.1.4)
Requirement already satisfied: sympy==1.13.1 in /usr/local/lib/python3.10/dist-packages (from torch>=1.10.0->accelerate) (1.13.1)
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/python3.10/dist-packages (from sympy==1.13.1->torch>=1.10.0->accelerate)
Requirement already satisfied: zipp>=3.20 in /usr/local/lib/python3.10/dist-packages (from importlib-metadata->diffusers) (3.21.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests->diffusers) (3.4.4)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests->diffusers) (3.10)
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests->diffusers) (2.2.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests->diffusers) (2024.12.14)
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.10/dist-packages (from Jinja2->torch>=1.10.0->accelerate)
```

```
# Checking if a GPU is available or not, if not it will setup accordingly
```

```
import torch
```

```
if torch.cuda.is_available():
```

```
    device = "cuda"
```

```
    print("Using GPU")
```

```
else:
```

```
    device = "cpu"
```

```
    print("Using CPU")
```

```
Using CPU
```

```
# Importing required modules
```

```
from diffusers import StableDiffusionPipeline
```

```
from PIL import Image
```

```
import io
```

```
import matplotlib.pyplot as plt
```

```
# Loading pre-trained stable diffusion model
```

```
model_id = "runwayml/stable-diffusion-v1-5" # Or "stabilityai/stable-diffusion-2-1"
```

```
pipe = StableDiffusionPipeline.from_pretrained(model_id).to(device)
```

```
Loading pipeline components...: 100% 7/7 [00:02<00:00, 1.77it/s]
```

```
# Generating an image and displaying a image
```

```
def generate_and_display_image(prompt):
```

```
    """
```

```
    Generates an image from a text prompt using Stable Diffusion and displays it.
```

```
    Args:
```

```
        prompt: The text prompt to generate the image from.
```

```
    """
```

```
    try:
```

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

```
        # Display the image using matplotlib
```

```
        plt.imshow(image)
```

```
        plt.axis('off') # Hide axes
```

```
        plt.show()
```

```
        return image
```

```
    except Exception as e:
```

```
        print(f"An error occurred: {e}")
```

```
    return None
```

```
# Example for generating a image
```

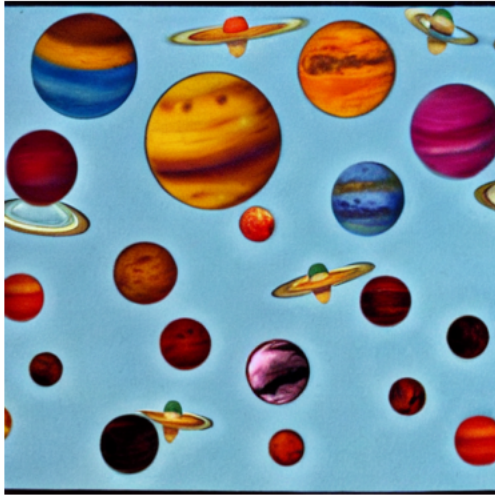
```
prompt = "Planets"
```

```
generated_image = generate_and_display_image(prompt)
```



100%

50/50 [35:47&lt;00:00, 40.68s/it]



```
# printing type of image
if generated_image:
    print(type(generated_image))
```



```
<class 'PIL.Image.Image'>
```

Start coding or [generate](#) with AI.