Task-02: Image Generation with Pre-trained Models

## Introduction

Image generation models like DALL·E-mini and Stable Diffusion can generate images based on text prompts. In this task, we explore using these pre-trained models to create visually meaningful images from descriptions.

## Steps Involved

1. Install required libraries (`diffusers`, `transformers`, `torch`, etc.)  
2. Choose a pre-trained model (e.g., DALL·E mini or Stable Diffusion)  
3. Generate image from prompt  
4. Save or visualize output

## Sample Code (Stable Diffusion)

```python  
from diffusers import StableDiffusionPipeline  
import torch  
  
# Load model  
pipe = StableDiffusionPipeline.from\_pretrained("CompVis/stable-diffusion-v1-4", torch\_dtype=torch.float16)  
pipe = pipe.to("cuda")  
  
# Prompt for image generation  
prompt = "a futuristic city skyline at sunset"  
  
# Generate image  
image = pipe(prompt).images[0]  
  
# Save image  
image.save("generated\_image.png")  
```

## Example Output

Prompt: 'A scenic mountain landscape with a river during sunrise'  
Output: [Image will be generated visually using the model]

## How to Run

1. Install required packages using pip (e.g., `pip install diffusers transformers torch`)  
2. Run the script in a Python environment with a GPU  
3. Generated image will be saved as 'generated\_image.png'

## References

1. https://huggingface.co/CompVis/stable-diffusion-v1-4  
2. https://github.com/huggingface/diffusers  
3. https://github.com/borisdayma/dalle-mini  
4. https://huggingface.co/docs/diffusers/index