Objective: To create an AI-Powered Text-to-Image Generator using Google Colab.

This project takes a text prompt given by the user and generates high-quality images automatically using a Streamlit web-based interface.

The model runs locally inside the Colab runtime and supports GPU acceleration, which makes generation faster and more realistic.

A user can input a prompt, modify generation settings (negative prompt, guidance scale, number of images), see the result, and then download the images generated.
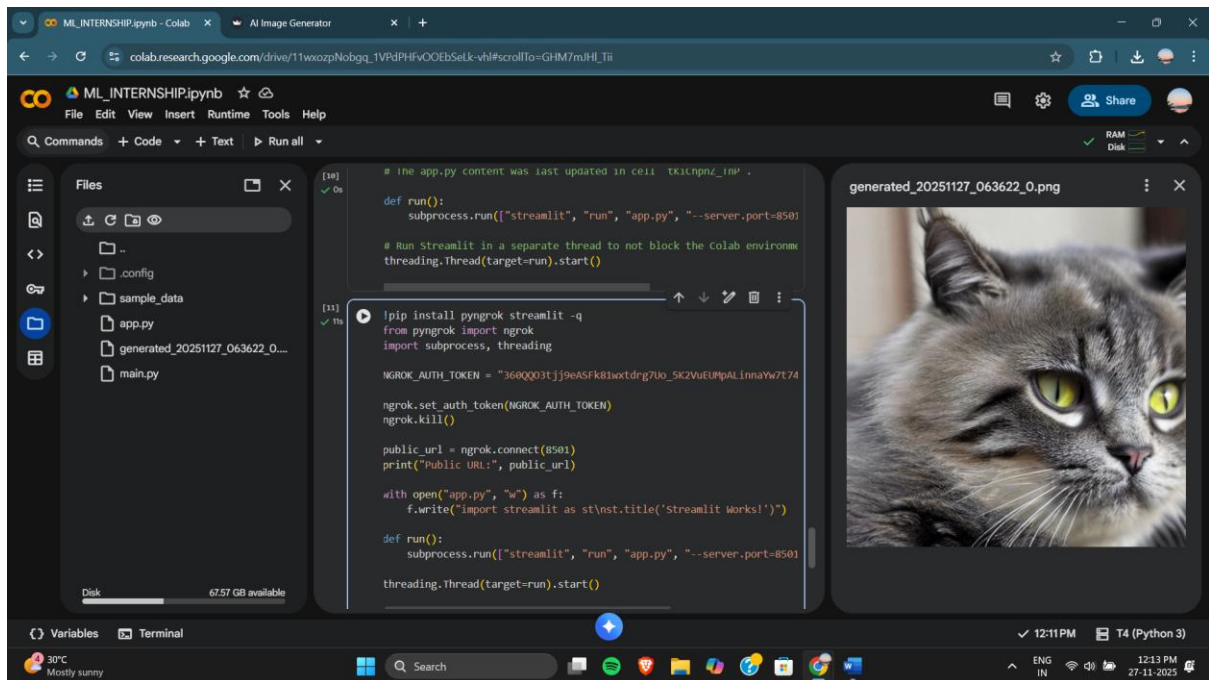
All the generated outputs are automatically saved for future reference, including metadata like timestamps.
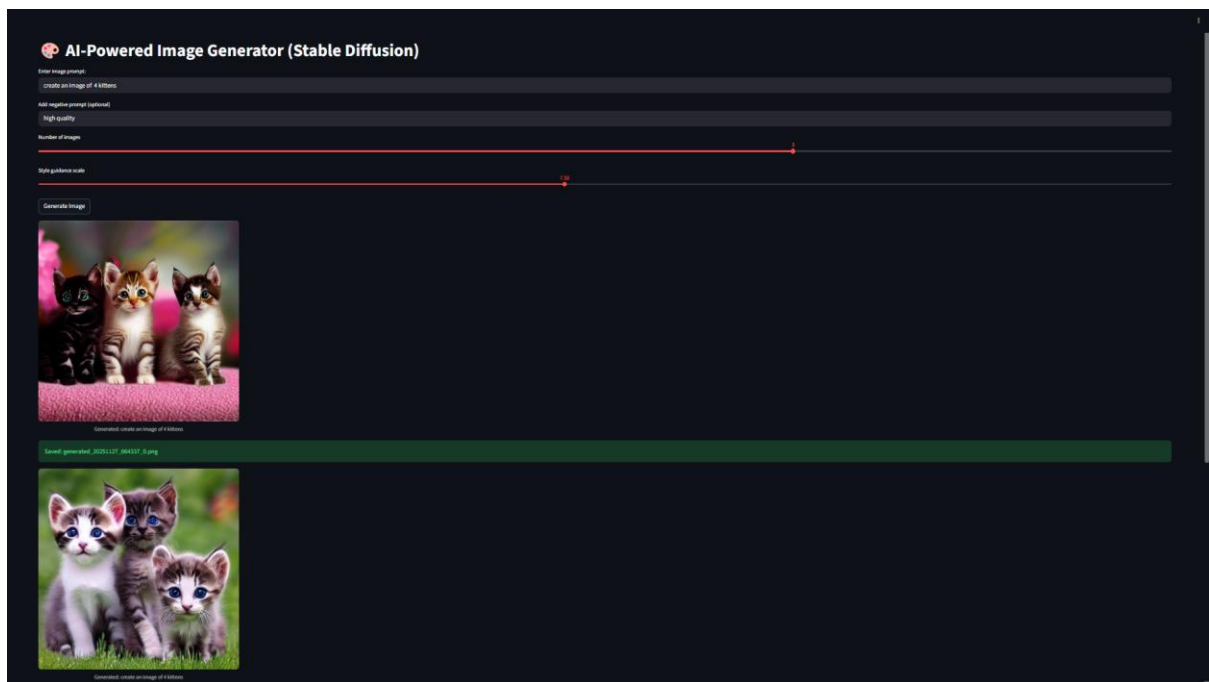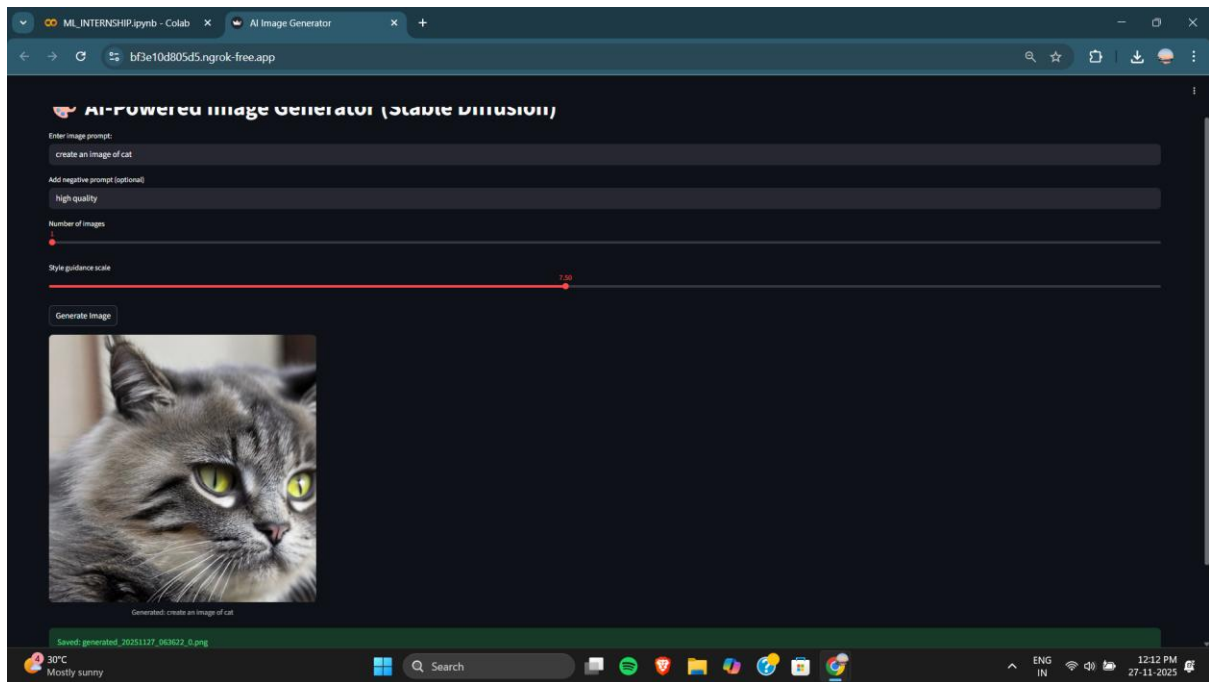
Machine Learning Model Used: Stable Diffusion v1.5

Running Environment: Google Collab (runtime – T4GPU)

RESULTS:

COLAB:

SUMMARY:

Stable Diffusion is used in this project because it is a state-of-the-art Latent Diffusion Model (LDM) that generates high-quality images while being computationally efficient enough to run on Google Colab GPUs. Unlike earlier diffusion models that operate directly on full-resolution images, Stable Diffusion works in a compressed latent space, significantly reducing memory usage and speeding up image generation without compromising quality. It is fully open-source and allows prompt customization, negative prompting, fine-tuning, and ethical controls—all of which are crucial for real-world generative AI applications. While advanced models like MidJourney, DALL·E 3, SDXL, and DeepFloyd IF exist, they are either closed-source, commercially restricted, or require higher compute, making Stable Diffusion the most practical and powerful choice for this internship project.