



Interview Prep

Accelerator

SWE RESIDENT

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# Pentagram: Realtime Image Diffusion

In this project, you will be building a web app where users can generate images using text, through an image generation model that you host on serverless GPUs.



Faizan Ahmed

REACT

TYPESCRIPT

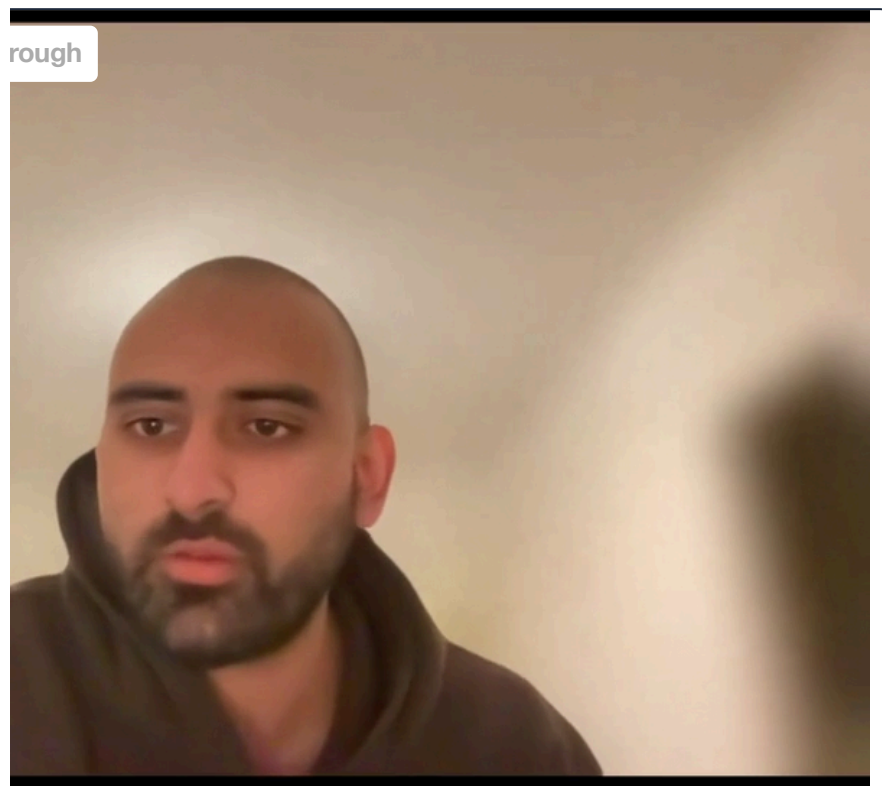
MODAL

APIS

AUTHENTICATION

HARDWARE

INFRASTRUCTURE



1

2

Live Walkthrough

## Resources

[Getting started with Modal](#)[Building an Image Generation Pipeline on Modal](#)[Run Stable Diffusion as a CLI, API, and web UI](#)[Midjourney Examples](#)[NVIDIA GPU Comparison](#)[Modal Playground](#)[Modal Cold Start Guide](#)

[Image Generation Models](#)[Modal Web Endpoints](#)

For this project, you are tasked with building an Instagram clone, where instead of users uploading pictures themselves, they can generate images with text prompts. Instead of using existing image generation APIs, you will have to host an image generation model yourself on serverless GPUs and ensure low latency for a smooth user experience.

### Getting Started:

- Learn how Modal works [here](#), along with the other resources provided above
- Set up the backend API using Modal that generates images from a text prompt
- Clone the [GitHub repo here](#) for the web app where users can generate images, and take a look at the TODOs in the codebase

### Project Requirements:

- Host an image generation model (e.g., Stable Diffusion) on serverless GPUs through Modal, ensuring low-latency performance for smooth user experience.
- Create a web app that allows users to generate images from text prompts, manage their creations, and interact socially through likes, comments, and sharing features.
- Incorporate intuitive UI/UX design, authentication, and efficient image management with prompt histories.

### Challenges:

- Ensuring the hosted image generation model operates within low-latency thresholds (<2 seconds) while handling multiple concurrent requests
- Managing the dynamic scaling of GPU resources to handle demand spikes without exceeding cost or causing performance bottlenecks.
- Add the ability to search for images semantically
- Prevent harmful or inappropriate content from being generated
- Build a recommendation system that creates personalized feeds for users, balancing new content discovery with user preferences

## Submit Assignment

YouTube URL \*

Submit a 3 minute demo of you presenting the project

GitHub URL \*

Submit the URL of your GitHub repo here

**Skills \***

List the skills you used to complete this project (e.g. React, TypeScript...)

**Submit**