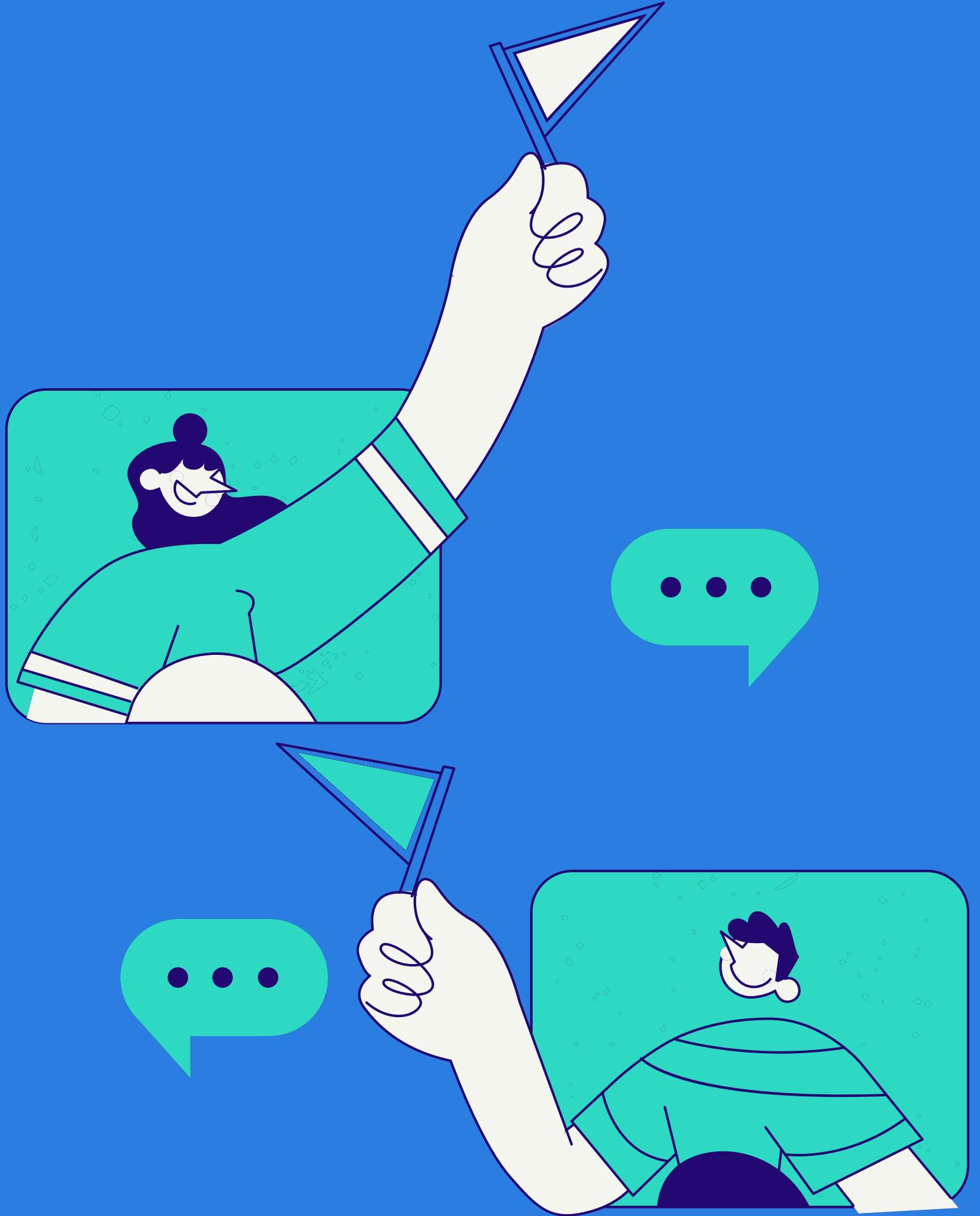


Image-to-Image Search

LAURA LE





Agenda

Topics Covered

1

Search pipeline

2

Tools that I used

3

Limitations

4

Key Success Factors

Search pipeline stages

There are 2 stages:

1. Indexing Stage:

- Upsert dataset that are retrieved from the Internet
- Store and manage image embeddings

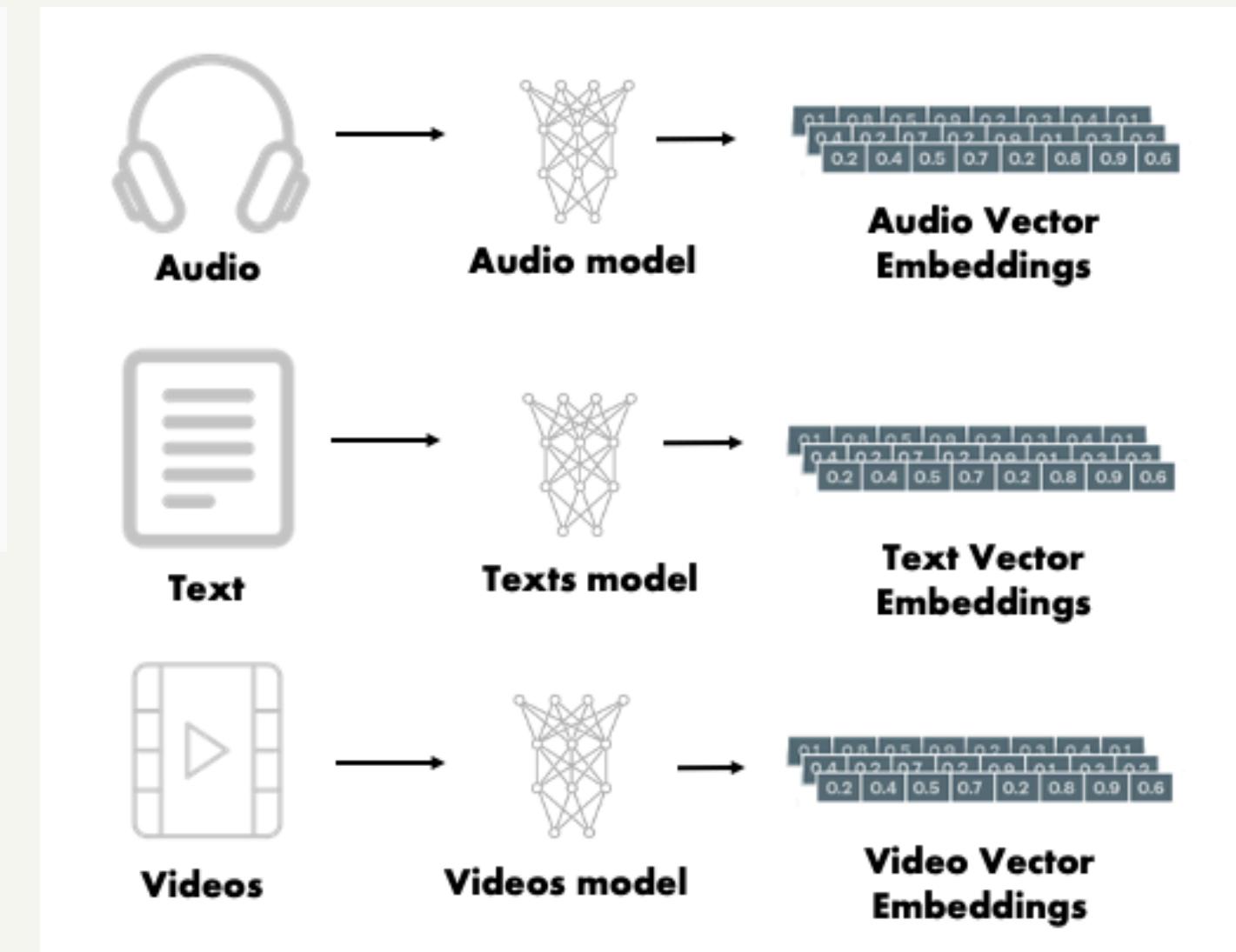
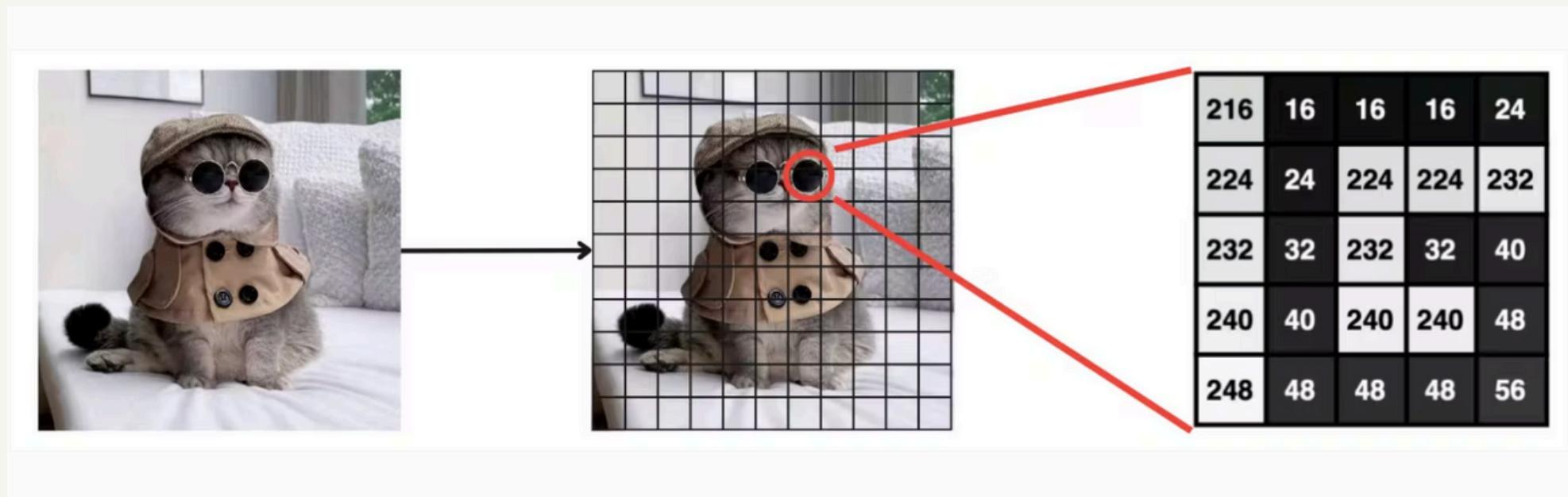
2. Search Stage:

- Query similar images

What are image embeddings?

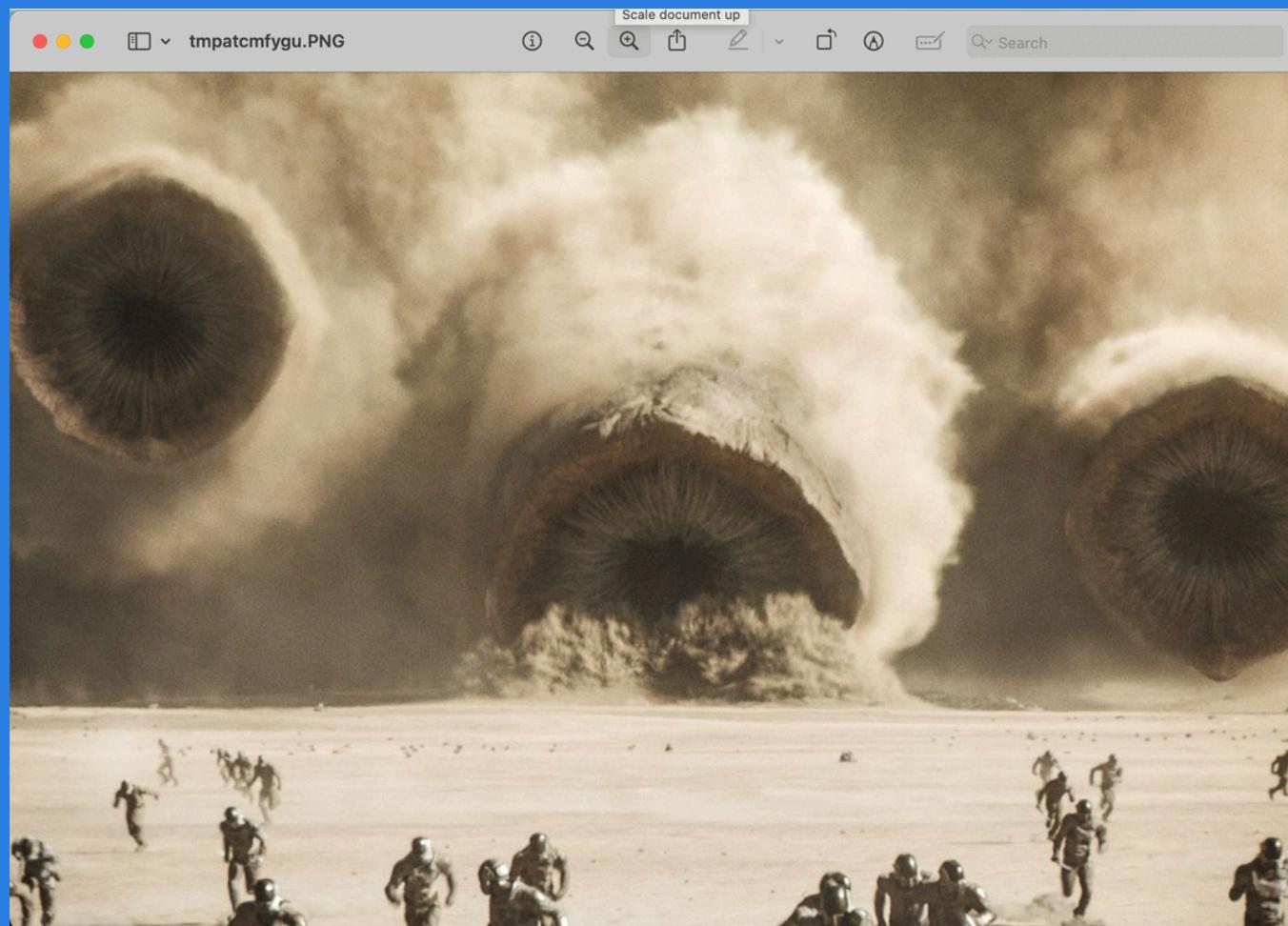
- A numerical representation of images encoded into a lower-dimensional vector representation.
- Condense the complexity of visual data into a compact form.
--> Easier for machine learning models to process the semantic and visual features of visual data.

Images are created by combining pixels, with each pixel containing unique information. For machine learning models to understand the image, each pixel needs to be represented as an image embedding.

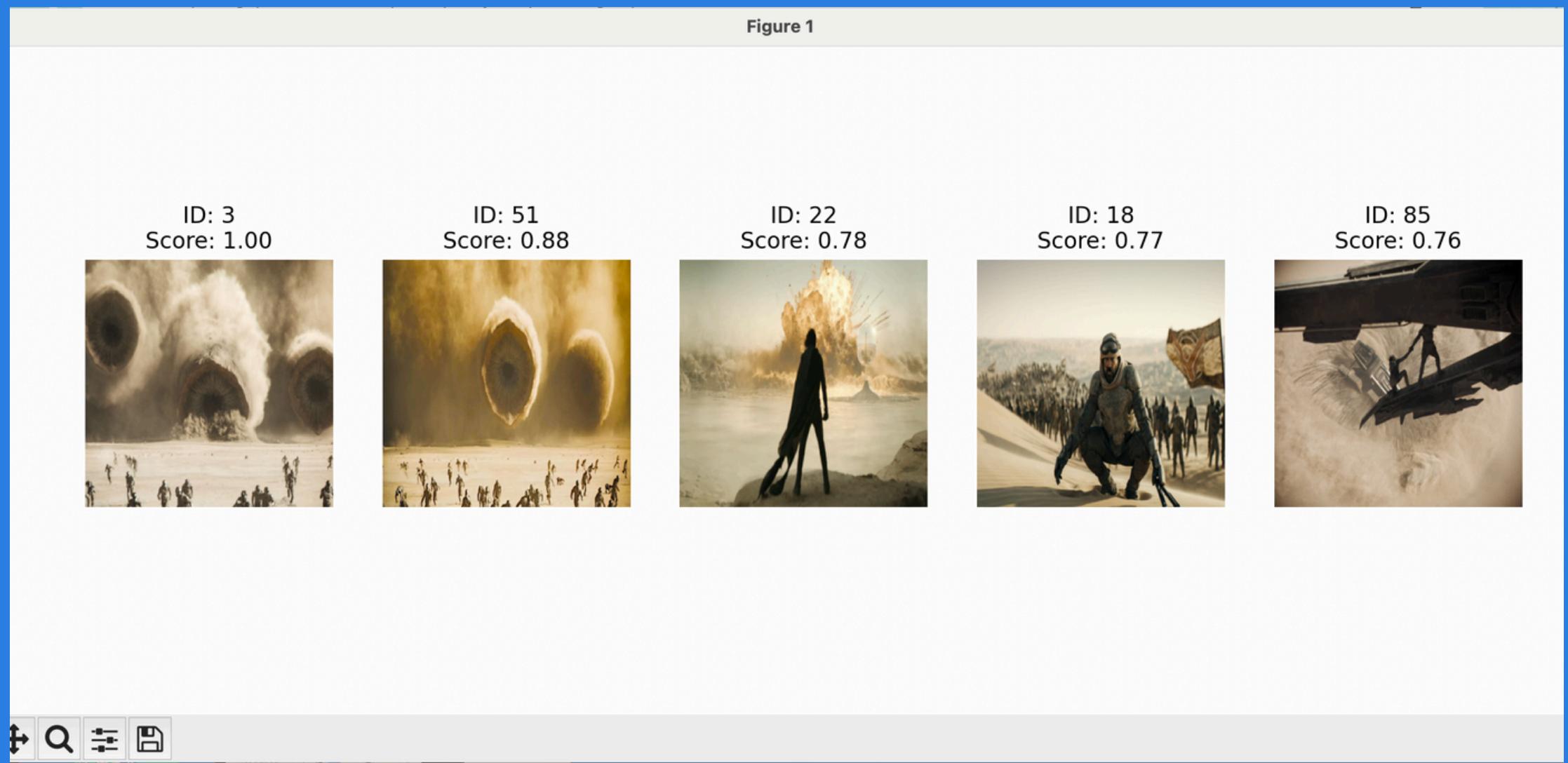


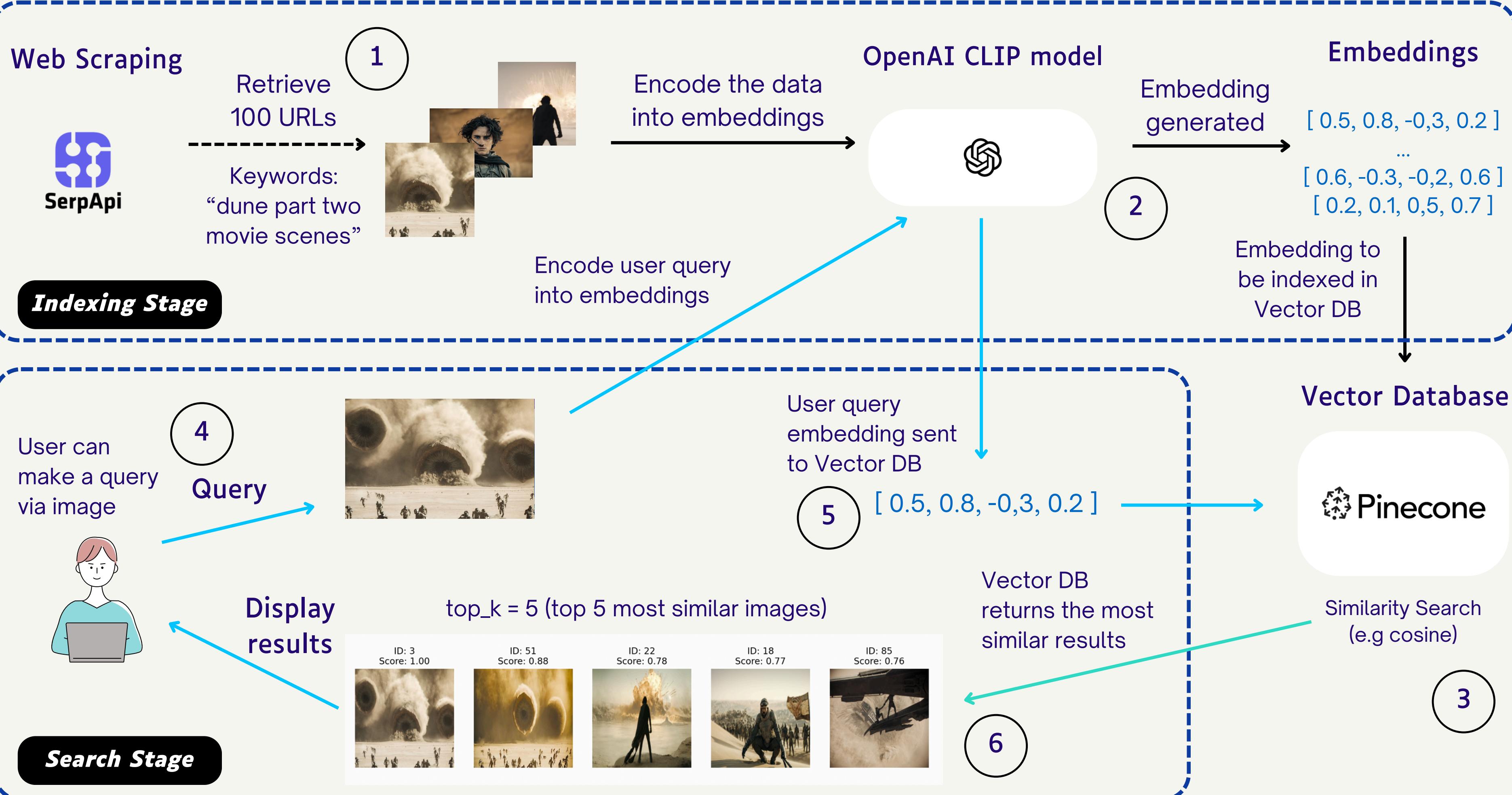
Query top 5 similar images

Input:



Output:





Tools that I used

1. **SerpAPI:** Web Scraper - retrieve 100 URLs with a keyphrase
2. **OpenAI Contrastive Language-Image Pre-training (CLIP) model:**
 - Create embeddings for each picture
3. **Pinecone database:**
 - Store pictures' embeddings and metadata
 - Query similar images with the highest similarity score

Key success factors

- ✓ Ability to identify source image location on the Internet
- ✓ Ability to find similar images or other posting of the image on the Internet

Secondary success factors

- ✓ Ability to identify “like” images based on relevancy – like the silhouette in the poster versus the postcard
- ✓ Ability to search for images across social media platforms
- ✗ Ability to search for images in private internet sources like Discord and Patreon

Limitations

1. Limit to 100 URLs per search query
2. User can only make a query via image
3. Medium latency when CLIP model encodes the data into embeddings

References

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