Image Search

School of Computer Science and Technology
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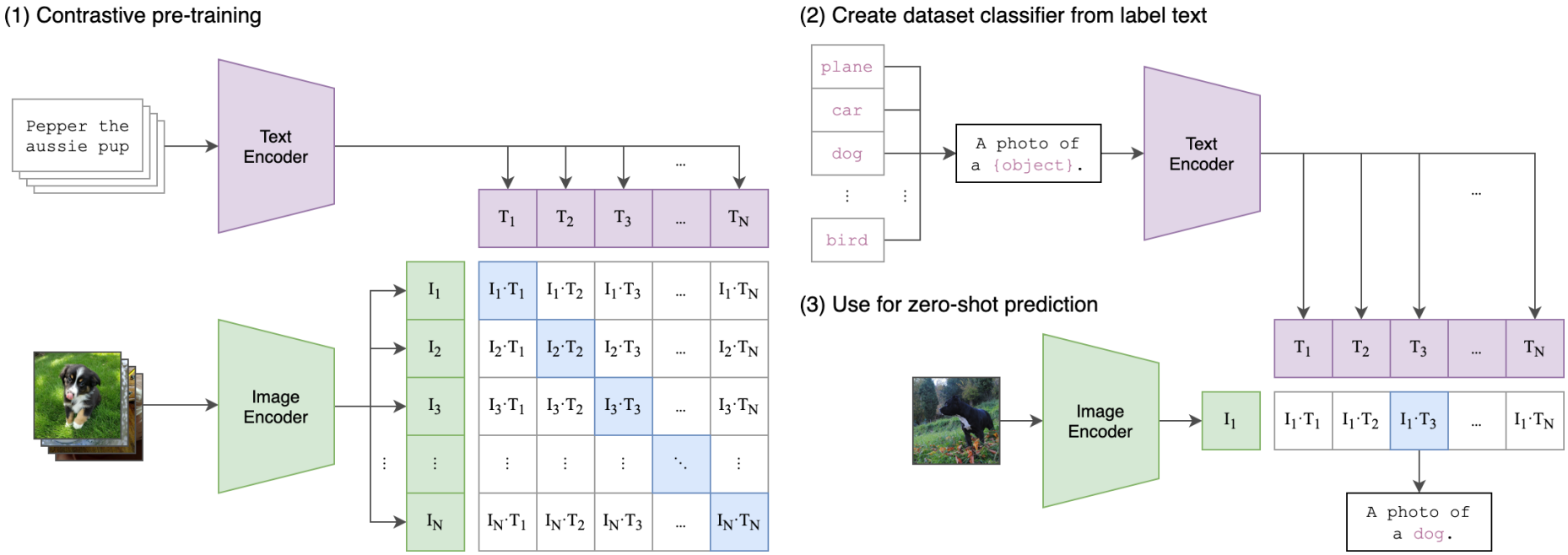
CLIP



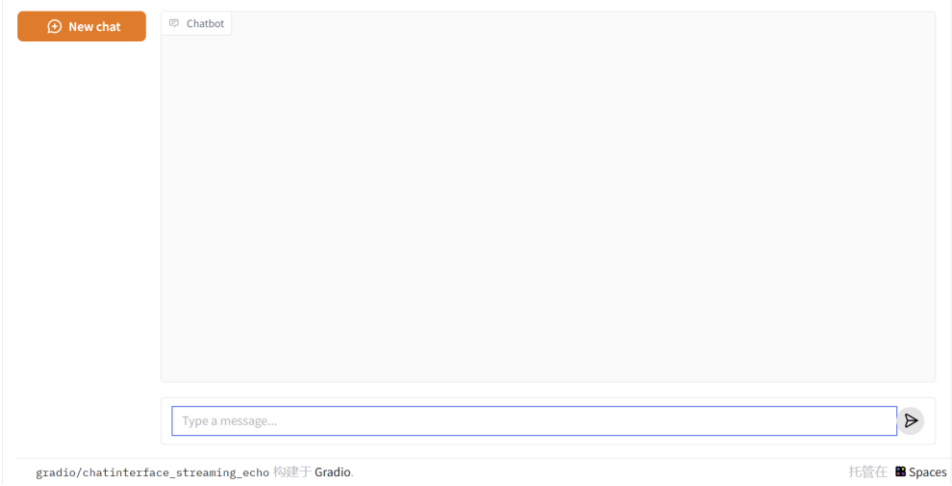
- CLIP (Contrastive Language-Image Pre-Training) is a neural network trained on a variety of (image, text) pairs.

Upstash Vector

- Upstash Vector is a serverless vector database designed for high-performance vector search at scale.
- https://upstash.com/docs/vector/overall/getstarted/

gradio framework

gradio



- A Python library for quickly creating and sharing user interfaces for machine learning models. It simplifies the process of building a user interface (UI).
- Supports multiple types of input and output components, such as text boxes, image uploaders, sliders, and more.

Five-stage search framework

- A five-stage search framework help to coordinate design practices and satisfy the needs of all users
  - Formulation
  - Initiation of action
  - Review of results
  - Refinement
  - Use
- Five-stages can be repeated until users' needs are met
- If users' are unsatisfied with the results, they should be able to have additional options and change their queries easily

Assignment

构建一个图像搜索的可视化页面

- 推荐使用Gradio + Upstash Vector + CLIP
- 可使用的数据集不限，请在报告部分简要介绍你所使用的数据集

（一个可能的选择：https://github.com/marcusklasson/GroceryStoreDataset）

- 构建的用户可视化页面时，需要满足以下内容（总分5分）

➢ 图像搜索功能

以文字搜索图像：用户能够使用**文字**进行图像搜索，并得到按相似度排序的结果（2分）

以图像搜索图像：用户能够使用**图像**进行图像搜索，并得到按相似度排序的结果（2分）

➢ 用户可以下载或者收藏检索到的图片（1分）

请在报告中介绍该功能是如何提升用户交互体验的

参考：

https://colab.research.google.com/drive/1y7ZBBxzEOAeSRDhyOeTxIJADxBC-0Fue

https://zhuanlan.zhihu.com/p/21699582502，http://imagesearch.idatacoding.cn/

Assignment

- The searching interface has the following features:
  - It contains an input box to upload an image/description text (Formulation);
  - Users can preview the query in the searching window (Formulation);
  - It has a search button (Initiation);
  - Provide an overview of the results (e.g. the total number of results) (Review);
  - Allow changing search parameters (e.g. change the number of returned images) when reviewing results (Refinement);
  - Users can take some actions, e.g. add selected images to a favorite list or download (Use);

Report

- The report should answer the following questions (in English)，总分5分:
  1. 简要介绍所使用的数据集来源，数据集的规模和内容。
  2. 你设计的图像搜索界面是如何反映出Five-Stage Search Framework的?
  3. 简要介绍你在可选部分所设计的功能是如何提升用户交互体验的（可选）
  4. 在设计图像搜索界面时，不同输入方式（文字/图片）对用户操作流程有何影响？如何使这两种方式对用户同样友好?

- 报告至多不超过6页（不含封面等，只算正文部分），written in English
- Submit your work (code and report)
  - Prepare a readme file to illustrate how to run your program
  - Compress all the codes and the report into a zip file: ID_name_lab3.zip
  - Submitted to canvas.tongji.edu.cn