Auto annotation with Grounding Dino

Overview

Grounding DINO can detect arbitrary objects with human inputs such as category names or referring expressions. The key solution of open-set object detection is introducing language to a closed-set detector DINO. It is for open-set concept generalization.

Model

The model includes: a text backbone, an image backbone, a feature enhancer, a language-guided query selection, and a cross-modality decoder.
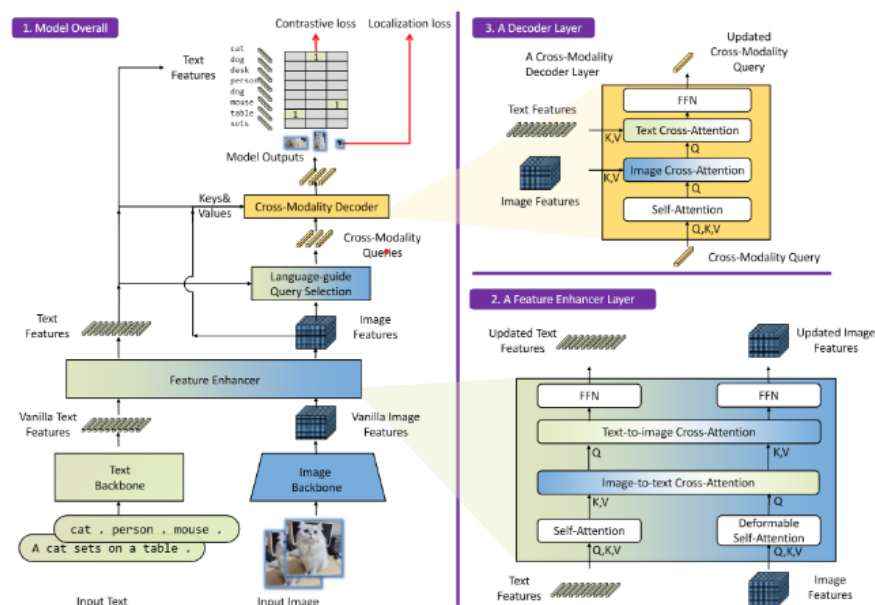

Figure 3. The framework of Grounding DINO. We present the overall framework, a feature enhancer layer, and a decoder layer in block 1, block 2, and block 3, respectively.

Fig 1. Model Implementation from the paper

They trained two model variants, Grounding-DINO-T with Swin-T, and Grounding DINO-L with Swin-L as an image backbone, respectively. They leveraged BERT-base from Hugging Face as text backbones.

Example

Package installation

`git clone https://github.com/IDEA-Research/GroundingDINO.git`

`cd GroundingDINO/`

`git checkout feature/more_compact_inference_api`

`pip install -q -e .`

`pip install -q roboflow dataclasses-json onemetric`

`mkdir weights`   //Where models are held

cd weights

`wget -q https://github.com/IDEA-Research/GroundingDINO/releases/download/v0.1.0-alpha/groundingdino_swint_ogc.pth`

Additional Step:

`mkdir Directory_Where_Installed/data`

Upload images to annotate

Roboflow Installation:

Setting up Model in Python IDE

`import os`

`from groundingdino.util.inference import Model`

HOME = Directory where GroundingDINO was installed

`CONFIG_PATH = os.path.join(HOME, "GroundingDINO/groundingdino/config/GroundingDINO_SwinT_OGC.py")`

`WEIGHTS_PATH = os.path.join(HOME/weights, "groundingdino_swint_ogc.pth")` //Second argument is whatever model you're using

`model = Model(model_config_path=CONFIG_PATH, model_checkpoint_path=WEIGHTS_PATH)`

Image sources:

Player detection:

University of Wyoming. Intercollegiate Athletics records - Archives West

Highlights: Women's Basketball vs. Fresno State 3/10/21 (MW Tournament)

Wyoming vs. Boston College Men's Basketball Highlights (2022-23)

Wyoming vs. Northern Iowa: Larry Nance Jr. slam

Highlights: Wyoming vs. UCLA (1987 NCAA Tournament)

#22 New Mexico vs Wyoming Basketball Game Highlights 12 31 2022

Wyoming Ties NCAA Record With 28 Three Pointers

▶ Wyoming at Nebraska | Highlights | Big Ten Women's Basketball | Dec. 18, 2022

Number detection:

▶ Marcus Williams Wyoming Cowboys MWC Freshman of the Year Highlights | 2020-21 Season

▶ HIGHLIGHTS: Wyoming at New Mexico Volleyball 9/29/2022

▶ Men's Basketball: 2/19/22 vs. Air Force Highlights

▶ Wyoming Basketball Top 5 Plays of the 2019-20 Season | Stadium

▶ Wyoming Coaches Association All Star Volleyball 2023

▶ MTU vs. PSU NCAA Tournament Highlights

▶ MSU vs. SCSU NCAA Tournament Highlights 3/23/23

▶ HIGHLIGHTS: Boise State vs Wyoming Football 11/19/2022

▶ HIGHLIGHTS: Wyoming at Colorado State Football 11/12/2022

▶ Morgan Hentz's top NCAA volleyball tournament plays

▶ Soccer Championship Highlights: Wyoming vs. San José State

▶ HIGHLIGHTS: Wyoming at Colorado College Women's Soccer 10/13/2022