

Instructions to run the code:

1 Additional packages to install:

On top of the comp0197-cwl-pt environment, the following two packages need to be installed to successfully run the code:

- `pip install opencv-python`
- `pip install sam2`

2 Downloading the dataset:

The Oxford-IIIT Pet Dataset wasn't submitted with the code due to storage constraints. To run the experiment, make sure to download the dataset first by running the python code below:

```
from torchvision.datasets import OxfordIIITPet
OxfordIIITPet(root="./data", download=True)
```

3 Instructions to run the code:

1. Baselines (Fully Supervised Use Case)

Run the baseline script with the desired config (stored in a `.json` file in `src/configs`).
Modify the config to change the parameters.

```
python baseline.py --config ./src/configs/baseline.json
```

CAM method selection experiments:

```
python main_cam.py --config ./src/configs/main_cam_05_cam.json
```

```
python main_cam.py --config ./src/configs/main_cam_05_gradcam.json
```

```
python main_cam.py --config ./src/configs/main_cam_05_gradcampp.json
```

2. Weak Supervision Segmentation: Class Activation Map

Run the main script with the desired config (stored in a .json file in src/configs).

Modify the config to change the parameters.

```
python main_cam.py --config ./src/configs/main_cam.json
```

Ablation studies experiments

```
python main_cam.py --config ./src/configs/main_cam_00001.json
```

```
python main_cam.py --config ./src/configs/main_cam_0001.json
```

```
python main_cam.py --config ./src/configs/main_cam_001.json
```

```
python main_cam.py --config ./src/configs/main_cam_01.json
```

```
python main_cam.py --config ./src/configs/main_cam_0005.json
```

```
python main_cam.py --config ./src/configs/main_cam_05.json
```

```
python main_cam.py --config ./src/configs/main_cam_07.json
```

3. Weak Supervision Segmentation: Bounding Box

Run the main script with the desired config (stored in a .json file in src/configs).

Modify the config to change the parameters.

```
python main_bbox.py --config ./src/configs/main_bbox.json
```

Bounding box experiments:

```
python main_bbox.py --config ./src/configs/main_bbox_slic.json
```

```
python main_bbox.py --config ./src/configs/main_bbox_grabcut.json
```

4. Weak Supervision Segmentation: Foundation Models

Run the main script with the desired config (stored in a .json file in src/configs).

Modify the config to change the parameters.

Zero-Shot experiment

```
python main_fm.py --config ./src/configs/main_fm.json
```

with the last line of main_fm.py: `main(mode = "zero_shot")`.

Pseudo-mask experiment

```
python main_fm.py --config ./src/configs/main_fm.json
```

with the last line of main_fm.py: `main(mode = "pseudo_mask")`.

CAM-SAM experiment

```
python main_fm.py --config ./src/configs/cam_sam_config.json
```

with the last line of main_fm.py: `main(mode = "cam_pseudo_mask")`.

4 Note:

For repository structure and additional information, please look to the repository's README.md file.