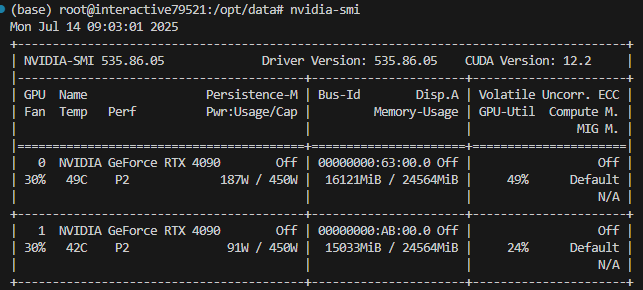
**Server Information：**



**Environment Configuration：**

**# Note that the red characters are the positions where instructions need to be entered, and the blue characters are the specific instructions.**

**(base) root@interactive46444:/opt/data/private#git clone https://github.com/wchao0601/M4-SAR.git**

Cloning into 'M4-SAR'...

remote: Enumerating objects: 1619, done.

remote: Counting objects: 100% (1619/1619), done.

remote: Compressing objects: 100% (1290/1290), done.

remote: Total 1619 (delta 358), reused 1503 (delta 293), pack-reused 0 (from 0)

Receiving objects: 100% (1619/1619), 30.38 MiB | 1.57 MiB/s, done.

Resolving deltas: 100% (358/358), done.

Checking out files: 100% (1307/1307), done.

**(base) root@interactive46444:/opt/data/private# cd M4-SAR**

**(base) root@interactive46444:/opt/data/private/M4-SAR# ls**

CITATION.cff LICENSE README.zh-CN.md docs examples gen-predict-label.py multigpu-train.py test.py train.py vis-predict-label.py

CONTRIBUTING.md README.md STTrack environment.yml gen-heatmap.py img requirements.txt tests ultralytics

**(base) root@interactive46444:/opt/data/private/M4-SAR# conda create -n e2e-osdet python=3.11**

Collecting package metadata (current\_repodata.json): done

Solving environment: done

==> WARNING: A newer version of conda exists. <==

current version: 4.8.2

latest version: 25.3.1

Please update conda by running

$ conda update -n base -c defaults conda

## Package Plan ##

environment location: /root/anaconda3/envs/e2e-osdet

added / updated specs:

- python=3.11

The following packages will be downloaded:

package | build

---------------------------|-----------------

pip-25.1 | pyhc872135\_2 1.3 MB

python-3.11.11 | he870216\_0 32.9 MB

setuptools-78.1.1 | py311h06a4308\_0 2.3 MB

tzdata-2025b | h04d1e81\_0 116 KB

wheel-0.45.1 | py311h06a4308\_0 151 KB

------------------------------------------------------------

Total: 36.7 MB

The following NEW packages will be INSTALLED:

\_libgcc\_mutex pkgs/main/linux-64::\_libgcc\_mutex-0.1-main

\_openmp\_mutex pkgs/main/linux-64::\_openmp\_mutex-5.1-1\_gnu

bzip2 pkgs/main/linux-64::bzip2-1.0.8-h5eee18b\_6

ca-certificates pkgs/main/linux-64::ca-certificates-2025.2.25-h06a4308\_0

ld\_impl\_linux-64 pkgs/main/linux-64::ld\_impl\_linux-64-2.40-h12ee557\_0

libffi pkgs/main/linux-64::libffi-3.4.4-h6a678d5\_1

libgcc-ng pkgs/main/linux-64::libgcc-ng-11.2.0-h1234567\_1

libgomp pkgs/main/linux-64::libgomp-11.2.0-h1234567\_1

libstdcxx-ng pkgs/main/linux-64::libstdcxx-ng-11.2.0-h1234567\_1

libuuid pkgs/main/linux-64::libuuid-1.41.5-h5eee18b\_0

ncurses pkgs/main/linux-64::ncurses-6.4-h6a678d5\_0

openssl pkgs/main/linux-64::openssl-3.0.16-h5eee18b\_0

pip pkgs/main/noarch::pip-25.1-pyhc872135\_2

python pkgs/main/linux-64::python-3.11.11-he870216\_0

readline pkgs/main/linux-64::readline-8.2-h5eee18b\_0

setuptools pkgs/main/linux-64::setuptools-78.1.1-py311h06a4308\_0

sqlite pkgs/main/linux-64::sqlite-3.45.3-h5eee18b\_0

tk pkgs/main/linux-64::tk-8.6.14-h39e8969\_0

tzdata pkgs/main/noarch::tzdata-2025b-h04d1e81\_0

wheel pkgs/main/linux-64::wheel-0.45.1-py311h06a4308\_0

xz pkgs/main/linux-64::xz-5.6.4-h5eee18b\_1

zlib pkgs/main/linux-64::zlib-1.2.13-h5eee18b\_1

**Proceed ([y]/n)? y**

Downloading and Extracting Packages

python-3.11.11 | 32.9 MB | ############################################################################################################################################# | 100%

wheel-0.45.1 | 151 KB | ############################################################################################################################################# | 100%

tzdata-2025b | 116 KB | ############################################################################################################################################# | 100%

setuptools-78.1.1 | 2.3 MB | ############################################################################################################################################# | 100%

pip-25.1 | 1.3 MB | ############################################################################################################################################# | 100%

Preparing transaction: done

Verifying transaction: done

Executing transaction: done

#

# To activate this environment, use

#

# $ conda activate e2e-osdet

#

# To deactivate an active environment, use

#

# $ conda deactivate

**(base) root@interactive46444:/opt/data/private/M4-SAR# conda activate e2e-osdet**

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR# pip install torch==2.1.1 torchvision==0.16.1 torchaudio==2.1.1 --index-url https://download.pytorch.org/whl/cu118**

**Looking in indexes: https://download.pytorch.org/whl/cu118**

Collecting torch==2.1.1

Using cached https://download.pytorch.org/whl/cu118/torch-2.1.1%2Bcu118-cp311-cp311-linux\_x86\_64.whl (2326.0 MB)

Collecting torchvision==0.16.1

Using cached https://download.pytorch.org/whl/cu118/torchvision-0.16.1%2Bcu118-cp311-cp311-linux\_x86\_64.whl (6.1 MB)

Collecting torchaudio==2.1.1

Using cached https://download.pytorch.org/whl/cu118/torchaudio-2.1.1%2Bcu118-cp311-cp311-linux\_x86\_64.whl (3.2 MB)

Collecting filelock (from torch==2.1.1)

Downloading https://download.pytorch.org/whl/filelock-3.13.1-py3-none-any.whl.metadata (2.8 kB)

Collecting typing-extensions (from torch==2.1.1)

Downloading https://download.pytorch.org/whl/typing\_extensions-4.12.2-py3-none-any.whl.metadata (3.0 kB)

Collecting sympy (from torch==2.1.1)

Downloading https://download.pytorch.org/whl/sympy-1.13.3-py3-none-any.whl.metadata (12 kB)

Collecting networkx (from torch==2.1.1)

Downloading https://download.pytorch.org/whl/networkx-3.3-py3-none-any.whl.metadata (5.1 kB)

Collecting jinja2 (from torch==2.1.1)

Downloading https://download.pytorch.org/whl/Jinja2-3.1.4-py3-none-any.whl.metadata (2.6 kB)

Collecting fsspec (from torch==2.1.1)

Downloading https://download.pytorch.org/whl/fsspec-2024.6.1-py3-none-any.whl.metadata (11 kB)

Collecting triton==2.1.0 (from torch==2.1.1)

Using cached https://download.pytorch.org/whl/triton-2.1.0-0-cp311-cp311-manylinux2014\_x86\_64.manylinux\_2\_17\_x86\_64.whl (89.2 MB)

Collecting numpy (from torchvision==0.16.1)

Downloading https://download.pytorch.org/whl/numpy-2.1.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (60 kB)

Collecting requests (from torchvision==0.16.1)

Using cached https://download.pytorch.org/whl/requests-2.28.1-py3-none-any.whl (62 kB)

Collecting pillow!=8.3.\*,>=5.3.0 (from torchvision==0.16.1)

Downloading https://download.pytorch.org/whl/pillow-11.0.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (9.1 kB)

Collecting MarkupSafe>=2.0 (from jinja2->torch==2.1.1)

Using cached https://download.pytorch.org/whl/MarkupSafe-2.1.5-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (28 kB)

Collecting charset-normalizer<3,>=2 (from requests->torchvision==0.16.1)

Using cached https://download.pytorch.org/whl/charset\_normalizer-2.1.1-py3-none-any.whl (39 kB)

Collecting idna<4,>=2.5 (from requests->torchvision==0.16.1)

Using cached https://download.pytorch.org/whl/idna-3.4-py3-none-any.whl (61 kB)

Collecting urllib3<1.27,>=1.21.1 (from requests->torchvision==0.16.1)

Using cached https://download.pytorch.org/whl/urllib3-1.26.13-py2.py3-none-any.whl (140 kB)

Collecting certifi>=2017.4.17 (from requests->torchvision==0.16.1)

Using cached https://download.pytorch.org/whl/certifi-2022.12.7-py3-none-any.whl (155 kB)

Collecting mpmath<1.4,>=1.1.0 (from sympy->torch==2.1.1)

Using cached https://download.pytorch.org/whl/mpmath-1.3.0-py3-none-any.whl (536 kB)

Downloading https://download.pytorch.org/whl/pillow-11.0.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (4.3 MB)

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Using cached https://download.pytorch.org/whl/filelock-3.13.1-py3-none-any.whl (11 kB)

Downloading https://download.pytorch.org/whl/fsspec-2024.6.1-py3-none-any.whl (177 kB)

Downloading https://download.pytorch.org/whl/Jinja2-3.1.4-py3-none-any.whl (133 kB)

Downloading https://download.pytorch.org/whl/networkx-3.3-py3-none-any.whl (1.7 MB)

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Downloading https://download.pytorch.org/whl/numpy-2.1.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (16.3 MB)

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Downloading https://download.pytorch.org/whl/sympy-1.13.3-py3-none-any.whl (6.2 MB)

━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 6.2/6.2 MB 6.7 MB/s eta 0:00:00

Downloading https://download.pytorch.org/whl/typing\_extensions-4.12.2-py3-none-any.whl (37 kB)

Installing collected packages: mpmath, urllib3, typing-extensions, sympy, pillow, numpy, networkx, MarkupSafe, idna, fsspec, filelock, charset-normalizer, certifi, triton, requests, jinja2, torch, torchvision, torchaudio

Successfully installed MarkupSafe-2.1.5 certifi-2022.12.7 charset-normalizer-2.1.1 filelock-3.13.1 fsspec-2024.6.1 idna-3.4 jinja2-3.1.4 mpmath-1.3.0 networkx-3.3 numpy-2.1.2 pillow-11.0.0 requests-2.28.1 sympy-1.13.3 torch-2.1.1+cu118 torchaudio-2.1.1+cu118 torchvision-0.16.1+cu118 triton-2.1.0 typing-extensions-4.12.2 urllib3-1.26.13

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR# pip install seaborn thop timm einops**

WARNING: Retrying (Retry(total=4, connect=None, read=None, redirect=None, status=None)) after connection broken by 'ConnectTimeoutError(<pip.\_vendor.urllib3.connection.HTTPSConnection object at 0x7f2ef485c250>, 'Connection to pypi.org timed out. (connect timeout=15)')': /simple/seaborn/

Collecting seaborn

Using cached seaborn-0.13.2-py3-none-any.whl.metadata (5.4 kB)

Collecting thop

Using cached thop-0.1.1.post2209072238-py3-none-any.whl.metadata (2.7 kB)

Collecting timm

Using cached timm-1.0.15-py3-none-any.whl.metadata (52 kB)

Collecting einops

Downloading einops-0.8.1-py3-none-any.whl.metadata (13 kB)

Requirement already satisfied: numpy!=1.24.0,>=1.20 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from seaborn) (2.1.2)

Collecting pandas>=1.2 (from seaborn)

Downloading pandas-2.2.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (89 kB)

Collecting matplotlib!=3.6.1,>=3.4 (from seaborn)

Downloading matplotlib-3.10.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (11 kB)

Requirement already satisfied: torch in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from thop) (2.1.1+cu118)

Requirement already satisfied: torchvision in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from timm) (0.16.1+cu118)

Collecting pyyaml (from timm)

Downloading PyYAML-6.0.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (2.1 kB)

Collecting huggingface\_hub (from timm)

Downloading huggingface\_hub-0.31.4-py3-none-any.whl.metadata (13 kB)

Collecting safetensors (from timm)

Using cached safetensors-0.5.3-cp38-abi3-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (3.8 kB)

Collecting contourpy>=1.0.1 (from matplotlib!=3.6.1,>=3.4->seaborn)

Downloading contourpy-1.3.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (5.5 kB)

Collecting cycler>=0.10 (from matplotlib!=3.6.1,>=3.4->seaborn)

Using cached cycler-0.12.1-py3-none-any.whl.metadata (3.8 kB)

Collecting fonttools>=4.22.0 (from matplotlib!=3.6.1,>=3.4->seaborn)

Downloading fonttools-4.58.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (104 kB)

Collecting kiwisolver>=1.3.1 (from matplotlib!=3.6.1,>=3.4->seaborn)

Downloading kiwisolver-1.4.8-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (6.2 kB)

Collecting packaging>=20.0 (from matplotlib!=3.6.1,>=3.4->seaborn)

Downloading packaging-25.0-py3-none-any.whl.metadata (3.3 kB)

Requirement already satisfied: pillow>=8 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (11.0.0)

Collecting pyparsing>=2.3.1 (from matplotlib!=3.6.1,>=3.4->seaborn)

Downloading pyparsing-3.2.3-py3-none-any.whl.metadata (5.0 kB)

Collecting python-dateutil>=2.7 (from matplotlib!=3.6.1,>=3.4->seaborn)

Using cached python\_dateutil-2.9.0.post0-py2.py3-none-any.whl.metadata (8.4 kB)

Collecting pytz>=2020.1 (from pandas>=1.2->seaborn)

Using cached pytz-2025.2-py2.py3-none-any.whl.metadata (22 kB)

Collecting tzdata>=2022.7 (from pandas>=1.2->seaborn)

Using cached tzdata-2025.2-py2.py3-none-any.whl.metadata (1.4 kB)

Collecting six>=1.5 (from python-dateutil>=2.7->matplotlib!=3.6.1,>=3.4->seaborn)

Using cached six-1.17.0-py2.py3-none-any.whl.metadata (1.7 kB)

Requirement already satisfied: filelock in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface\_hub->timm) (3.13.1)

Requirement already satisfied: fsspec>=2023.5.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface\_hub->timm) (2024.6.1)

Requirement already satisfied: requests in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface\_hub->timm) (2.28.1)

Collecting tqdm>=4.42.1 (from huggingface\_hub->timm)

Using cached tqdm-4.67.1-py3-none-any.whl.metadata (57 kB)

Requirement already satisfied: typing-extensions>=3.7.4.3 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface\_hub->timm) (4.12.2)

Requirement already satisfied: charset-normalizer<3,>=2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests->huggingface\_hub->timm) (2.1.1)

Requirement already satisfied: idna<4,>=2.5 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests->huggingface\_hub->timm) (3.4)

Requirement already satisfied: urllib3<1.27,>=1.21.1 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests->huggingface\_hub->timm) (1.26.13)

Requirement already satisfied: certifi>=2017.4.17 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests->huggingface\_hub->timm) (2022.12.7)

Requirement already satisfied: sympy in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->thop) (1.13.3)

Requirement already satisfied: networkx in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->thop) (3.3)

Requirement already satisfied: jinja2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->thop) (3.1.4)

Requirement already satisfied: triton==2.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->thop) (2.1.0)

Requirement already satisfied: MarkupSafe>=2.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from jinja2->torch->thop) (2.1.5)

Requirement already satisfied: mpmath<1.4,>=1.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from sympy->torch->thop) (1.3.0)

Using cached seaborn-0.13.2-py3-none-any.whl (294 kB)

Using cached thop-0.1.1.post2209072238-py3-none-any.whl (15 kB)

Using cached timm-1.0.15-py3-none-any.whl (2.4 MB)

Downloading einops-0.8.1-py3-none-any.whl (64 kB)

Downloading matplotlib-3.10.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (8.6 MB)

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Downloading contourpy-1.3.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (326 kB)

Using cached cycler-0.12.1-py3-none-any.whl (8.3 kB)

Downloading fonttools-4.58.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (4.9 MB)

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Downloading kiwisolver-1.4.8-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (1.4 MB)

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Downloading packaging-25.0-py3-none-any.whl (66 kB)

Downloading pandas-2.2.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (13.1 MB)

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Downloading pyparsing-3.2.3-py3-none-any.whl (111 kB)

Using cached python\_dateutil-2.9.0.post0-py2.py3-none-any.whl (229 kB)

Downloading pytz-2025.2-py2.py3-none-any.whl (509 kB)

Using cached six-1.17.0-py2.py3-none-any.whl (11 kB)

Using cached tzdata-2025.2-py2.py3-none-any.whl (347 kB)

Downloading huggingface\_hub-0.31.4-py3-none-any.whl (489 kB)

Downloading PyYAML-6.0.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (762 kB)

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Downloading tqdm-4.67.1-py3-none-any.whl (78 kB)

Using cached safetensors-0.5.3-cp38-abi3-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (471 kB)

Installing collected packages: pytz, tzdata, tqdm, six, safetensors, pyyaml, pyparsing, packaging, kiwisolver, fonttools, einops, cycler, contourpy, python-dateutil, huggingface\_hub, thop, pandas, matplotlib, timm, seaborn

Successfully installed contourpy-1.3.2 cycler-0.12.1 einops-0.8.1 fonttools-4.58.0 huggingface\_hub-0.31.4 kiwisolver-1.4.8 matplotlib-3.10.3 packaging-25.0 pandas-2.2.3 pyparsing-3.2.3 python-dateutil-2.9.0.post0 pytz-2025.2 pyyaml-6.0.2 safetensors-0.5.3 seaborn-0.13.2 six-1.17.0 thop-0.1.1.post2209072238 timm-1.0.15 tqdm-4.67.1 tzdata-2025.2

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR# cd STTrack/mamba\_install/causal-conv1d**

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR/STTrack/mamba\_install/causal-conv1d# CAUSAL\_CONV1D\_FORCE\_BUILD=TRUE pip install .**

Processing /opt/data/private/M4-SAR/STTrack/mamba\_install/causal-conv1d

Preparing metadata (setup.py) ... done

Requirement already satisfied: torch in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from causal\_conv1d==1.0.0) (2.1.1+cu118)

Requirement already satisfied: packaging in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from causal\_conv1d==1.0.0) (25.0)

Collecting ninja (from causal\_conv1d==1.0.0)

Downloading ninja-1.11.1.4-py3-none-manylinux\_2\_12\_x86\_64.manylinux2010\_x86\_64.whl.metadata (5.0 kB)

Requirement already satisfied: filelock in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (3.13.1)

Requirement already satisfied: typing-extensions in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (4.12.2)

Requirement already satisfied: sympy in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (1.13.3)

Requirement already satisfied: networkx in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (3.3)

Requirement already satisfied: jinja2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (3.1.4)

Requirement already satisfied: fsspec in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (2024.6.1)

Requirement already satisfied: triton==2.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->causal\_conv1d==1.0.0) (2.1.0)

Requirement already satisfied: MarkupSafe>=2.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from jinja2->torch->causal\_conv1d==1.0.0) (2.1.5)

Requirement already satisfied: mpmath<1.4,>=1.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from sympy->torch->causal\_conv1d==1.0.0) (1.3.0)

Downloading ninja-1.11.1.4-py3-none-manylinux\_2\_12\_x86\_64.manylinux2010\_x86\_64.whl (422 kB)

Building wheels for collected packages: causal\_conv1d

DEPRECATION: Building 'causal\_conv1d' using the legacy setup.py bdist\_wheel mechanism, which will be removed in a future version. pip 25.3 will enforce this behaviour change. A possible replacement is to use the standardized build interface by setting the `--use-pep517` option, (possibly combined with `--no-build-isolation`), or adding a `pyproject.toml` file to the source tree of 'causal\_conv1d'. Discussion can be found at https://github.com/pypa/pip/issues/6334

Building wheel for causal\_conv1d (setup.py) ... done

Created wheel for causal\_conv1d: filename=causal\_conv1d-1.0.0-cp311-cp311-linux\_x86\_64.whl size=5790152 sha256=17d32c842b957438f85f42718a1b9922940e4cd22080196d0f62d2bd95d4c4b9

Stored in directory: /root/.cache/pip/wheels/ea/40/c4/28ff70203313f05e870fc43eb05d1a7ffebb006419b772c52e

Successfully built causal\_conv1d

Installing collected packages: ninja, causal\_conv1d

Successfully installed causal\_conv1d-1.0.0 ninja-1.11.1.4

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR/STTrack/mamba\_install/causal-conv1d# cd ../selective\_scan**

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR/STTrack/mamba\_install/selective\_scan# pip install .**

Processing /opt/data/private/M4-SAR/STTrack/mamba\_install/selective\_scan

Preparing metadata (setup.py) ... done

Requirement already satisfied: torch in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from selective\_scan==0.0.1) (2.1.1+cu118)

Requirement already satisfied: packaging in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from selective\_scan==0.0.1) (25.0)

Requirement already satisfied: ninja in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from selective\_scan==0.0.1) (1.11.1.4)

Requirement already satisfied: einops in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from selective\_scan==0.0.1) (0.8.1)

Requirement already satisfied: filelock in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (3.13.1)

Requirement already satisfied: typing-extensions in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (4.12.2)

Requirement already satisfied: sympy in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (1.13.3)

Requirement already satisfied: networkx in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (3.3)

Requirement already satisfied: jinja2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (3.1.4)

Requirement already satisfied: fsspec in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (2024.6.1)

Requirement already satisfied: triton==2.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch->selective\_scan==0.0.1) (2.1.0)

Requirement already satisfied: MarkupSafe>=2.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from jinja2->torch->selective\_scan==0.0.1) (2.1.5)

Requirement already satisfied: mpmath<1.4,>=1.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from sympy->torch->selective\_scan==0.0.1) (1.3.0)

Building wheels for collected packages: selective\_scan

DEPRECATION: Building 'selective\_scan' using the legacy setup.py bdist\_wheel mechanism, which will be removed in a future version. pip 25.3 will enforce this behaviour change. A possible replacement is to use the standardized build interface by setting the `--use-pep517` option, (possibly combined with `--no-build-isolation`), or adding a `pyproject.toml` file to the source tree of 'selective\_scan'. Discussion can be found at https://github.com/pypa/pip/issues/6334

Building wheel for selective\_scan (setup.py) ... done

Created wheel for selective\_scan: filename=selective\_scan-0.0.1-cp311-cp311-linux\_x86\_64.whl size=19013774 sha256=37405345cf0cf203b739ba1ef486a8410470d221bb71bab6b79e42616f469002

Stored in directory: /tmp/pip-ephem-wheel-cache-8qnp6g7y/wheels/54/ee/4a/8e7734e35bcf2f654f83c63ec4bb950fae274f32690dd086c1

Successfully built selective\_scan

Installing collected packages: selective\_scan

Successfully installed selective\_scan-0.0.1

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR/STTrack/mamba\_install/selective\_scan# cd /opt/data/private/M4-SAR/**

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR# pip install -r requirements.txt**

Collecting appdirs==1.4.4 (from -r requirements.txt (line 1))

Using cached appdirs-1.4.4-py2.py3-none-any.whl.metadata (9.0 kB)

Collecting configparser==7.1.0 (from -r requirements.txt (line 2))

Using cached configparser-7.1.0-py3-none-any.whl.metadata (5.4 kB)

Collecting grad-cam==1.5.5 (from -r requirements.txt (line 3))

Downloading grad-cam-1.5.5.tar.gz (7.8 MB)

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Installing build dependencies ... done

Getting requirements to build wheel ... done

Preparing metadata (pyproject.toml) ... done

Collecting huggingface-hub==0.23.3 (from -r requirements.txt (line 4))

Using cached huggingface\_hub-0.23.3-py3-none-any.whl.metadata (12 kB)

Collecting joblib==1.4.2 (from -r requirements.txt (line 5))

Using cached joblib-1.4.2-py3-none-any.whl.metadata (5.4 kB)

Collecting kymatio==0.3.0 (from -r requirements.txt (line 6))

Using cached kymatio-0.3.0-py3-none-any.whl.metadata (9.6 kB)

Collecting numpy==1.26.3 (from -r requirements.txt (line 7))

Downloading numpy-1.26.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (61 kB)

Collecting opencv-python==4.10.0.82 (from -r requirements.txt (line 8))

Using cached opencv\_python-4.10.0.82-cp37-abi3-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (20 kB)

Collecting pandas==2.2.2 (from -r requirements.txt (line 9))

Using cached pandas-2.2.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (19 kB)

Collecting pillow==10.2.0 (from -r requirements.txt (line 10))

Downloading pillow-10.2.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (9.7 kB)

Collecting psutil==5.9.8 (from -r requirements.txt (line 11))

Using cached psutil-5.9.8-cp36-abi3-manylinux\_2\_12\_x86\_64.manylinux2010\_x86\_64.manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (21 kB)

Collecting ptflops==0.7.4 (from -r requirements.txt (line 12))

Using cached ptflops-0.7.4-py3-none-any.whl.metadata (9.4 kB)

Collecting py-cpuinfo==9.0.0 (from -r requirements.txt (line 13))

Using cached py\_cpuinfo-9.0.0-py3-none-any.whl.metadata (794 bytes)

Collecting pyparsing==3.1.2 (from -r requirements.txt (line 14))

Using cached pyparsing-3.1.2-py3-none-any.whl.metadata (5.1 kB)

Requirement already satisfied: python-dateutil==2.9.0.post0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from -r requirements.txt (line 15)) (2.9.0.post0)

Collecting pytz==2024.1 (from -r requirements.txt (line 16))

Using cached pytz-2024.1-py2.py3-none-any.whl.metadata (22 kB)

Collecting PyWavelets==1.8.0 (from -r requirements.txt (line 17))

Using cached pywavelets-1.8.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (9.0 kB)

Collecting PyYAML==6.0.1 (from -r requirements.txt (line 18))

Using cached PyYAML-6.0.1-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (2.1 kB)

Requirement already satisfied: requests==2.28.1 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from -r requirements.txt (line 19)) (2.28.1)

Collecting safetensors==0.4.3 (from -r requirements.txt (line 20))

Using cached safetensors-0.4.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (3.8 kB)

Collecting scikit-learn==1.6.1 (from -r requirements.txt (line 21))

Using cached scikit\_learn-1.6.1-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (18 kB)

Collecting scipy==1.13.1 (from -r requirements.txt (line 22))

Using cached scipy-1.13.1-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (60 kB)

Requirement already satisfied: seaborn==0.13.2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from -r requirements.txt (line 23)) (0.13.2)

Collecting shapely==2.0.4 (from -r requirements.txt (line 24))

Downloading shapely-2.0.4-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (7.0 kB)

Collecting six==1.16.0 (from -r requirements.txt (line 25))

Using cached six-1.16.0-py2.py3-none-any.whl.metadata (1.8 kB)

Collecting sympy==1.12 (from -r requirements.txt (line 26))

Downloading sympy-1.12-py3-none-any.whl.metadata (12 kB)

Requirement already satisfied: thop==0.1.1.post2209072238 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from -r requirements.txt (line 27)) (0.1.1.post2209072238)

Collecting threadpoolctl==3.6.0 (from -r requirements.txt (line 28))

Using cached threadpoolctl-3.6.0-py3-none-any.whl.metadata (13 kB)

Collecting timm==1.0.3 (from -r requirements.txt (line 29))

Using cached timm-1.0.3-py3-none-any.whl.metadata (43 kB)

Collecting torchdiffeq==0.2.5 (from -r requirements.txt (line 30))

Using cached torchdiffeq-0.2.5-py3-none-any.whl.metadata (440 bytes)

Collecting torchhaarfeatures==0.0.2 (from -r requirements.txt (line 31))

Using cached torchhaarfeatures-0.0.2-py3-none-any.whl

Collecting torchinfo==1.8.0 (from -r requirements.txt (line 32))

Using cached torchinfo-1.8.0-py3-none-any.whl.metadata (21 kB)

Collecting ttach==0.0.3 (from -r requirements.txt (line 33))

Using cached ttach-0.0.3-py3-none-any.whl.metadata (5.2 kB)

Collecting typing\_extensions==4.9.0 (from -r requirements.txt (line 34))

Downloading typing\_extensions-4.9.0-py3-none-any.whl.metadata (3.0 kB)

Collecting tzdata==2024.1 (from -r requirements.txt (line 35))

Using cached tzdata-2024.1-py2.py3-none-any.whl.metadata (1.4 kB)

Collecting ultralytics-thop==0.2.8 (from -r requirements.txt (line 36))

Using cached ultralytics\_thop-0.2.8-py3-none-any.whl.metadata (8.5 kB)

Requirement already satisfied: urllib3==1.26.13 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from -r requirements.txt (line 37)) (1.26.13)

Requirement already satisfied: torch>=1.7.1 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from grad-cam==1.5.5->-r requirements.txt (line 3)) (2.1.1+cu118)

Requirement already satisfied: torchvision>=0.8.2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from grad-cam==1.5.5->-r requirements.txt (line 3)) (0.16.1+cu118)

Requirement already satisfied: tqdm in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from grad-cam==1.5.5->-r requirements.txt (line 3)) (4.67.1)

Requirement already satisfied: matplotlib in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from grad-cam==1.5.5->-r requirements.txt (line 3)) (3.10.3)

Requirement already satisfied: filelock in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface-hub==0.23.3->-r requirements.txt (line 4)) (3.13.1)

Requirement already satisfied: fsspec>=2023.5.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface-hub==0.23.3->-r requirements.txt (line 4)) (2024.6.1)

Requirement already satisfied: packaging>=20.9 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from huggingface-hub==0.23.3->-r requirements.txt (line 4)) (25.0)

Requirement already satisfied: charset-normalizer<3,>=2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests==2.28.1->-r requirements.txt (line 19)) (2.1.1)

Requirement already satisfied: idna<4,>=2.5 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests==2.28.1->-r requirements.txt (line 19)) (3.4)

Requirement already satisfied: certifi>=2017.4.17 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from requests==2.28.1->-r requirements.txt (line 19)) (2022.12.7)

Requirement already satisfied: mpmath>=0.19 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from sympy==1.12->-r requirements.txt (line 26)) (1.3.0)

Requirement already satisfied: contourpy>=1.0.1 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from matplotlib->grad-cam==1.5.5->-r requirements.txt (line 3)) (1.3.2)

Requirement already satisfied: cycler>=0.10 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from matplotlib->grad-cam==1.5.5->-r requirements.txt (line 3)) (0.12.1)

Requirement already satisfied: fonttools>=4.22.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from matplotlib->grad-cam==1.5.5->-r requirements.txt (line 3)) (4.58.0)

Requirement already satisfied: kiwisolver>=1.3.1 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from matplotlib->grad-cam==1.5.5->-r requirements.txt (line 3)) (1.4.8)

Requirement already satisfied: networkx in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch>=1.7.1->grad-cam==1.5.5->-r requirements.txt (line 3)) (3.3)

Requirement already satisfied: jinja2 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch>=1.7.1->grad-cam==1.5.5->-r requirements.txt (line 3)) (3.1.4)

Requirement already satisfied: triton==2.1.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from torch>=1.7.1->grad-cam==1.5.5->-r requirements.txt (line 3)) (2.1.0)

Requirement already satisfied: MarkupSafe>=2.0 in /root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages (from jinja2->torch>=1.7.1->grad-cam==1.5.5->-r requirements.txt (line 3)) (2.1.5)

Using cached appdirs-1.4.4-py2.py3-none-any.whl (9.6 kB)

Using cached configparser-7.1.0-py3-none-any.whl (17 kB)

Using cached huggingface\_hub-0.23.3-py3-none-any.whl (401 kB)

Using cached joblib-1.4.2-py3-none-any.whl (301 kB)

Using cached kymatio-0.3.0-py3-none-any.whl (87 kB)

Downloading numpy-1.26.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (18.3 MB)

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Using cached opencv\_python-4.10.0.82-cp37-abi3-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (62.5 MB)

Using cached pandas-2.2.2-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (13.0 MB)

Downloading pillow-10.2.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (4.4 MB)

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Using cached psutil-5.9.8-cp36-abi3-manylinux\_2\_12\_x86\_64.manylinux2010\_x86\_64.manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (288 kB)

Using cached ptflops-0.7.4-py3-none-any.whl (19 kB)

Using cached py\_cpuinfo-9.0.0-py3-none-any.whl (22 kB)

Using cached pyparsing-3.1.2-py3-none-any.whl (103 kB)

Using cached pytz-2024.1-py2.py3-none-any.whl (505 kB)

Using cached pywavelets-1.8.0-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (4.5 MB)

Using cached PyYAML-6.0.1-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (757 kB)

Using cached safetensors-0.4.3-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (1.2 MB)

Using cached scikit\_learn-1.6.1-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (13.5 MB)

Using cached scipy-1.13.1-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (38.6 MB)

Downloading shapely-2.0.4-cp311-cp311-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (2.5 MB)

━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 2.5/2.5 MB 12.4 MB/s eta 0:00:00

Using cached six-1.16.0-py2.py3-none-any.whl (11 kB)

Downloading sympy-1.12-py3-none-any.whl (5.7 MB)

━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 5.7/5.7 MB 15.5 MB/s eta 0:00:00

Using cached threadpoolctl-3.6.0-py3-none-any.whl (18 kB)

Using cached timm-1.0.3-py3-none-any.whl (2.3 MB)

Using cached torchdiffeq-0.2.5-py3-none-any.whl (32 kB)

Using cached torchinfo-1.8.0-py3-none-any.whl (23 kB)

Using cached ttach-0.0.3-py3-none-any.whl (9.8 kB)

Downloading typing\_extensions-4.9.0-py3-none-any.whl (32 kB)

Using cached tzdata-2024.1-py2.py3-none-any.whl (345 kB)

Using cached ultralytics\_thop-0.2.8-py3-none-any.whl (25 kB)

Building wheels for collected packages: grad-cam

Building wheel for grad-cam (pyproject.toml) ... done

Created wheel for grad-cam: filename=grad\_cam-1.5.5-py3-none-any.whl size=44283 sha256=b90d37a780cefcb7a94dbf3e8a13d6a2d2f1ebb8b326b97d281b4e0ae55f3a5c

Stored in directory: /root/.cache/pip/wheels/bc/52/78/893c3b94279ef238f43a9e89608af648de401b96415bebbd1f

Successfully built grad-cam

Installing collected packages: pytz, py-cpuinfo, appdirs, tzdata, typing\_extensions, ttach, torchinfo, threadpoolctl, sympy, six, safetensors, PyYAML, pyparsing, psutil, pillow, numpy, joblib, configparser, shapely, scipy, PyWavelets, opencv-python, huggingface-hub, ultralytics-thop, torchhaarfeatures, torchdiffeq, scikit-learn, ptflops, pandas, kymatio, timm, grad-cam

Attempting uninstall: pytz

Found existing installation: pytz 2025.2

Uninstalling pytz-2025.2:

Successfully uninstalled pytz-2025.2

Attempting uninstall: tzdata

Found existing installation: tzdata 2025.2

Uninstalling tzdata-2025.2:

Successfully uninstalled tzdata-2025.2

Attempting uninstall: typing\_extensions

Found existing installation: typing\_extensions 4.12.2

Uninstalling typing\_extensions-4.12.2:

Successfully uninstalled typing\_extensions-4.12.2

Attempting uninstall: sympy

Found existing installation: sympy 1.13.3

Uninstalling sympy-1.13.3:

Successfully uninstalled sympy-1.13.3

Attempting uninstall: six

Found existing installation: six 1.17.0

Uninstalling six-1.17.0:

Successfully uninstalled six-1.17.0

Attempting uninstall: safetensors

Found existing installation: safetensors 0.5.3

Uninstalling safetensors-0.5.3:

Successfully uninstalled safetensors-0.5.3

Attempting uninstall: PyYAML

Found existing installation: PyYAML 6.0.2

Uninstalling PyYAML-6.0.2:

Successfully uninstalled PyYAML-6.0.2

Attempting uninstall: pyparsing

Found existing installation: pyparsing 3.2.3

Uninstalling pyparsing-3.2.3:

Successfully uninstalled pyparsing-3.2.3

Attempting uninstall: pillow

Found existing installation: pillow 11.0.0

Uninstalling pillow-11.0.0:

Successfully uninstalled pillow-11.0.0

Attempting uninstall: numpy

Found existing installation: numpy 2.1.2

Uninstalling numpy-2.1.2:

Successfully uninstalled numpy-2.1.2

Attempting uninstall: huggingface-hub

Found existing installation: huggingface-hub 0.31.4

Uninstalling huggingface-hub-0.31.4:

Successfully uninstalled huggingface-hub-0.31.4

Attempting uninstall: pandas

Found existing installation: pandas 2.2.3

Uninstalling pandas-2.2.3:

Successfully uninstalled pandas-2.2.3

Attempting uninstall: timm

Found existing installation: timm 1.0.15

Uninstalling timm-1.0.15:

Successfully uninstalled timm-1.0.15

Successfully installed PyWavelets-1.8.0 PyYAML-6.0.1 appdirs-1.4.4 configparser-7.1.0 grad-cam-1.5.5 huggingface-hub-0.23.3 joblib-1.4.2 kymatio-0.3.0 numpy-1.26.3 opencv-python-4.10.0.82 pandas-2.2.2 pillow-10.2.0 psutil-5.9.8 ptflops-0.7.4 py-cpuinfo-9.0.0 pyparsing-3.1.2 pytz-2024.1 safetensors-0.4.3 scikit-learn-1.6.1 scipy-1.13.1 shapely-2.0.4 six-1.16.0 sympy-1.12 threadpoolctl-3.6.0 timm-1.0.3 torchdiffeq-0.2.5 torchhaarfeatures-0.0.2 torchinfo-1.8.0 ttach-0.0.3 typing\_extensions-4.9.0 tzdata-2024.1 ultralytics-thop-0.2.8

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager, possibly rendering your system unusable. It is recommended to use a virtual environment instead: https://pip.pypa.io/warnings/venv. Use the --root-user-action option if you know what you are doing and want to suppress this warning.

**# Add the absolute path of the dataset to the dataset configuration file M4-SAR.yaml, and start training when finished (single GPU training is shown, note the setting device=0).**

**(e2e-osdet) root@interactive46444:/opt/data/private/M4-SAR# python train.py**

FlashAttention is not available on this device. Using scaled\_dot\_product\_attention instead.

WARNING ⚠️ YOLOv9 `Silence` module is deprecated in favor of nn.Identity. Please delete local \*.pt file and re-download the latest model checkpoint.

WARNING ⚠️ no model scale passed. Assuming scale='s'.

New https://pypi.org/project/ultralytics/8.3.142 available 😃 Update with 'pip install -U ultralytics'

Ultralytics 8.3.8 🚀 Python-3.11.11 torch-2.1.1+cu118 CUDA:1 (NVIDIA GeForce RTX 4090, 24217MiB)

engine/trainer: task=obb, mode=train, model=ultralytics/cfg/models/benchmark/yolo11-obb-E2E-OSDet.yaml, data=ultralytics/cfg/datasets/M4-SAR.yaml, epochs=300, time=None, patience=100, batch=1, imgsz=512, save=True, save\_period=-1, cache=False, device=1, workers=8, project=runs/train/M4-SAR/, name=yolo11-obb-E2E-OSDet-300e2, exist\_ok=False, pretrained=True, optimizer=auto, verbose=True, seed=0, deterministic=True, single\_cls=False, rect=False, cos\_lr=False, close\_mosaic=10, resume=False, amp=True, fraction=1.0, profile=False, freeze=None, multi\_scale=False, overlap\_mask=True, mask\_ratio=4, dropout=0.0, val=True, split=val, save\_json=False, save\_hybrid=False, conf=None, iou=0.7, max\_det=300, half=False, dnn=False, plots=True, source=None, vid\_stride=1, stream\_buffer=False, visualize=False, augment=False, agnostic\_nms=False, classes=None, retina\_masks=False, embed=None, show=False, save\_frames=False, save\_txt=False, save\_conf=False, save\_crop=False, show\_labels=True, show\_conf=True, show\_boxes=True, line\_width=None, format=torchscript, keras=False, optimize=False, int8=False, dynamic=False, simplify=True, opset=None, workspace=4, nms=False, lr0=0.01, lrf=0.01, momentum=0.937, weight\_decay=0.0005, warmup\_epochs=3.0, warmup\_momentum=0.8, warmup\_bias\_lr=0.1, box=7.5, cls=0.5, dfl=1.5, pose=12.0, kobj=1.0, label\_smoothing=0.0, nbs=64, hsv\_h=0.015, hsv\_s=0.7, hsv\_v=0.4, degrees=0.0, translate=0.1, scale=0.5, shear=0.0, perspective=0.0, flipud=0.0, fliplr=0.5, bgr=0.0, mosaic=1.0, mixup=0.0, copy\_paste=0.0, copy\_paste\_mode=flip, auto\_augment=randaugment, erasing=0.4, crop\_fraction=1.0, cfg=None, tracker=botsort.yaml, save\_dir=runs/train/M4-SAR/yolo11-obb-E2E-OSDet-300e2

/opt/data/private/DATA/MSOD/MSOD/optical/images/train /opt/data/private/DATA/MSOD/MSOD/sar/images/train /opt/data/private/DATA/MSOD/MSOD/optical/images/val /opt/data/private/DATA/MSOD/MSOD/sar/images/val

WARNING ⚠️ no model scale passed. Assuming scale='s'.

from n params module arguments

0 -1 1 0 torch.nn.modules.linear.Identity []

1 0 1 0 ultralytics.nn.modules.block.FAM\_OPT []

2 0 1 0 ultralytics.nn.modules.block.FAM\_SAR []

3 1 1 928 ultralytics.nn.modules.conv.Conv [3, 32, 3, 2]

4 -1 1 18560 ultralytics.nn.modules.conv.Conv [32, 64, 3, 2]

5 -1 1 26080 ultralytics.nn.modules.block.C3k2 [64, 128, 1, False, 0.25]

6 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

7 -1 1 103360 ultralytics.nn.modules.block.C3k2 [128, 256, 1, False, 0.25]

8 2 1 928 ultralytics.nn.modules.conv.Conv [3, 32, 3, 2]

9 -1 1 18560 ultralytics.nn.modules.conv.Conv [32, 64, 3, 2]

10 -1 1 26080 ultralytics.nn.modules.block.C3k2 [64, 128, 1, False, 0.25]

11 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

12 -1 1 103360 ultralytics.nn.modules.block.C3k2 [128, 256, 1, False, 0.25]

13 [7, 12] 1 952320 ultralytics.nn.modules.fusion.CMIM [256, 16]

14 [7, 13] 1 0 ultralytics.nn.modules.block.Add\_GPT [256, 0]

15 [12, 13] 1 0 ultralytics.nn.modules.block.Add\_GPT [256, 1]

16 14 1 590336 ultralytics.nn.modules.conv.Conv [256, 256, 3, 2]

17 -1 1 346112 ultralytics.nn.modules.block.C3k2 [256, 256, 1, True]

18 15 1 590336 ultralytics.nn.modules.conv.Conv [256, 256, 3, 2]

19 -1 1 346112 ultralytics.nn.modules.block.C3k2 [256, 256, 1, True]

20 [17, 19] 1 952320 ultralytics.nn.modules.fusion.CMIM [256, 16]

21 [17, 20] 1 0 ultralytics.nn.modules.block.Add\_GPT [256, 0]

22 [19, 20] 1 0 ultralytics.nn.modules.block.Add\_GPT [256, 1]

23 21 1 1180672 ultralytics.nn.modules.conv.Conv [256, 512, 3, 2]

24 -1 1 1380352 ultralytics.nn.modules.block.C3k2 [512, 512, 1, True]

25 -1 1 656896 ultralytics.nn.modules.block.SPPF [512, 512, 5]

26 22 1 1180672 ultralytics.nn.modules.conv.Conv [256, 512, 3, 2]

27 -1 1 1380352 ultralytics.nn.modules.block.C3k2 [512, 512, 1, True]

28 -1 1 656896 ultralytics.nn.modules.block.SPPF [512, 512, 5]

29 [25, 28] 1 3772416 ultralytics.nn.modules.fusion.CMIM [512, 32]

30 [25, 29] 1 0 ultralytics.nn.modules.block.Add\_GPT [512, 0]

31 [28, 29] 1 0 ultralytics.nn.modules.block.Add\_GPT [512, 1]

32 [14, 15] 1 818688 ultralytics.nn.modules.block.AFM [256]

33 [21, 22] 1 818688 ultralytics.nn.modules.block.AFM [256]

34 [30, 31] 1 3210240 ultralytics.nn.modules.block.AFM [512]

35 -1 1 990976 ultralytics.nn.modules.block.C2PSA [512, 512, 1]

36 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

37 [-1, 33] 1 0 ultralytics.nn.modules.conv.Concat [1]

38 -1 1 443776 ultralytics.nn.modules.block.C3k2 [768, 256, 1, False]

39 -1 1 0 torch.nn.modules.upsampling.Upsample [None, 2, 'nearest']

40 [-1, 32] 1 0 ultralytics.nn.modules.conv.Concat [1]

41 -1 1 127680 ultralytics.nn.modules.block.C3k2 [512, 128, 1, False]

42 -1 1 147712 ultralytics.nn.modules.conv.Conv [128, 128, 3, 2]

43 [-1, 38] 1 0 ultralytics.nn.modules.conv.Concat [1]

44 -1 1 345472 ultralytics.nn.modules.block.C3k2 [384, 256, 1, False]

45 -1 1 590336 ultralytics.nn.modules.conv.Conv [256, 256, 3, 2]

46 [-1, 35] 1 0 ultralytics.nn.modules.conv.Concat [1]

47 -1 1 1511424 ultralytics.nn.modules.block.C3k2 [768, 512, 1, True]

48 [41, 44, 47] 1 1107909 ultralytics.nn.modules.head.OBB [6, 1, [128, 256, 512]]

Use actual image size for input tensor (i.e. required for RTDETR models)

YOLO11-obb-E2E-OSDet summary: 663 layers, 24,691,973 parameters, 24,691,957 gradients

Freezing layer 'model.48.dfl.conv.weight'

AMP: running Automatic Mixed Precision (AMP) checks with YOLO11n...

Downloading https://github.com/ultralytics/assets/releases/download/v8.3.0/yolo11n.pt to 'yolo11n.pt'...

AMP: checks skipped ⚠️, offline and unable to download YOLO11n. Setting 'amp=True'. If you experience zero-mAP or NaN losses you can disable AMP with amp=False.

{'path': PosixPath('/opt/data/private/DATA/MSOD/MSOD'), 'train': '/opt/data/private/DATA/MSOD/MSOD/optical/images/train', 'val': '/opt/data/private/DATA/MSOD/MSOD/optical/images/val', 'test': '/opt/data/private/DATA/MSOD/MSOD/optical/images/test', 'train1': '/opt/data/private/DATA/MSOD/MSOD/sar/images/train', 'val1': '/opt/data/private/DATA/MSOD/MSOD/sar/images/val', 'test1': '/opt/data/private/DATA/MSOD/MSOD/sar/images/test', 'names': {0: 'bridge', 1: 'harbor', 2: 'oil\_tank', 3: 'playground', 4: 'airport', 5: 'wind\_turbine'}, 'yaml\_file': 'ultralytics/cfg/datasets/M4-SAR.yaml', 'nc': 6}

56116 56116

train: Scanning /opt/data/private/DATA/MSOD/MSOD/optical/labels/train... 56100 images, 0 backgrounds, 0 corrupt: 100%|██████████| 56116/56116 [01:37<00:00, 578.00it/s]

train: New cache created: /opt/data/private/DATA/MSOD/MSOD/optical/labels/train.cache

{'path': PosixPath('/opt/data/private/DATA/MSOD/MSOD'), 'train': '/opt/data/private/DATA/MSOD/MSOD/optical/images/train', 'val': '/opt/data/private/DATA/MSOD/MSOD/optical/images/val', 'test': '/opt/data/private/DATA/MSOD/MSOD/optical/images/test', 'train1': '/opt/data/private/DATA/MSOD/MSOD/sar/images/train', 'val1': '/opt/data/private/DATA/MSOD/MSOD/sar/images/val', 'test1': '/opt/data/private/DATA/MSOD/MSOD/sar/images/test', 'names': {0: 'bridge', 1: 'harbor', 2: 'oil\_tank', 3: 'playground', 4: 'airport', 5: 'wind\_turbine'}, 'yaml\_file': 'ultralytics/cfg/datasets/M4-SAR.yaml', 'nc': 6}

22112 22112

val: Scanning /opt/data/private/DATA/MSOD/MSOD/optical/labels/val... 22104 images, 0 backgrounds, 0 corrupt: 100%|██████████| 22112/22112 [00:38<00:00, 578.43it/s]

val: New cache created: /opt/data/private/DATA/MSOD/MSOD/optical/labels/val.cache

Plotting labels to runs/train/M4-SAR/yolo11-obb-E2E-OSDet-300e2/labels.jpg...

optimizer: 'optimizer=auto' found, ignoring 'lr0=0.01' and 'momentum=0.937' and determining best 'optimizer', 'lr0' and 'momentum' automatically...

optimizer: SGD(lr=0.01, momentum=0.9) with parameter groups 147 weight(decay=0.0), 226 weight(decay=0.0005), 201 bias(decay=0.0)

Image sizes 512 train, 512 val

Using 8 dataloader workers

Logging results to runs/train/M4-SAR/yolo11-obb-E2E-OSDet-300e2

Starting training for 300 epochs...

Epoch GPU\_mem box\_loss cls\_loss dfl\_loss Instances Size

0%| | 0/56100 [00:00<?, ?it/s]/root/anaconda3/envs/e2e-osdet/lib/python3.11/site-packages/torch/autograd/\_\_init\_\_.py:251: UserWarning: Memory Efficient attention defaults to a non-deterministic algorithm. To explicitly enable determinism call torch.use\_deterministic\_algorithms(True, warn\_only=False). (Triggered internally at ../aten/src/ATen/native/transformers/cuda/attention\_backward.cu:413.)

Variable.\_execution\_engine.run\_backward( # Calls into the C++ engine to run the backward pass

1/300 1.23G 3.557 6.564 2.443 2 512: 0%| | 85/56100 [00:16<3:00:04, 5.18it/s]^C