

Install Dependencies

```
In [ ]: # Install torch dependencies: (use cu110 since colab has CUDA 11)
!pip install -U torch==1.7.0+cu110 torchvision==0.8.0 -f https://download.pytorch.o

# Install mmcv-full thus we could use CUDA operators
!pip install mmcv-full -f https://download.openmmlab.com/mmcv/dist/cu110/torch1.6.0

# Install mmdetection
!pip install mmdet

# Install mmocr
!git clone https://github.com/open-mmlab/mmocr.git
%cd mmocr
!pip install -r requirements.txt
!pip install -v -e .
```

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Looking in links: https://download.pytorch.org/whl/torch_stable.html
Collecting torch==1.7.0+cu110
tcmalloc: large alloc 1137090560 bytes == 0x55fec2658000 @ 0x7ff4c85391e7 0x55feb
fab6a18 0x55febfa81987 0x55febfc00335 0x55febfb9aa48 0x55febfa85252 0x55febfb6396e
0x55febfa84ea9 0x55febfb76c0d 0x55febfaf90d8 0x55febfa8665a 0x55febfaf4d67 0x55feb
fa8665a 0x55febfaf4d67 0x55febfaf3dcc 0x55febfa86fec 0x55febfa871f1 0x55febfaf6318
0x55febfaf3c35 0x55febfa86fec 0x55febfa871f1 0x55febfaf6318 0x55febfaf3c35 0x55feb
fa86fec 0x55febfa871f1 0x55febfaf6318 0x55febfaf3dcc 0x55febfa86fec 0x55febfa871f1
0x55febfaf6318 0x55febfaf3c35
tcmalloc: large alloc 1421369344 bytes == 0x55ff062c2000 @ 0x7ff4c853a615 0x55feb
fa8202c 0x55febfb6217a 0x55febfa84e4d 0x55febfb76c0d 0x55febfaf90d8 0x55febfaf3c35
0x55febfa8673a 0x55febfaf4d67 0x55febfaf3c35 0x55febfa8673a 0x55febfaf4d67 0x55feb
faf3c35 0x55febfa8673a 0x55febfaf4d67 0x55febfaf3c35 0x55febfa8673a 0x55febfaf4d67
0x55febfaf3c35 0x55febfa8673a 0x55febfaf4d67 0x55febfa8665a 0x55febfaf4d67 0x55feb
faf3c35 0x55febfa8673a 0x55febfaf593b 0x55febfaf3c35 0x55febfa8673a 0x55febfaf4d67
0x55febfaf4235 0x55febfa8673a
Using cached https://download.pytorch.org/whl/cu110/torch-1.7.0%2Bcu110-cp37-cp3
7m-linux_x86_64.whl (1137.1 MB)
Collecting torchvision==0.8.0
    Downloading torchvision-0.8.0-cp37-cp37m-manylinux1_x86_64.whl (11.8 MB)
    [██████████] 11.8 MB 258 kB/s
Requirement already satisfied: typing-extensions in /usr/local/lib/python3.7/dist-
packages (from torch==1.7.0+cu110) (3.7.4.3)
Collecting dataclasses
    Downloading dataclasses-0.6-py3-none-any.whl (14 kB)
Requirement already satisfied: numpy in /usr/local/lib/python3.7/dist-packages (fr
om torch==1.7.0+cu110) (1.19.5)
Requirement already satisfied: future in /usr/local/lib/python3.7/dist-packages (f
rom torch==1.7.0+cu110) (0.16.0)
Requirement already satisfied: pillow>=4.1.1 in /usr/local/lib/python3.7/dist-pack
ages (from torchvision==0.8.0) (7.1.2)
Installing collected packages: dataclasses, torch, torchvision
Attempting uninstall: torch
    Found existing installation: torch 1.9.0+cu102
    Uninstalling torch-1.9.0+cu102:
        Successfully uninstalled torch-1.9.0+cu102
Attempting uninstall: torchvision
    Found existing installation: torchvision 0.10.0+cu102
    Uninstalling torchvision-0.10.0+cu102:
        Successfully uninstalled torchvision-0.10.0+cu102
ERROR: pip's dependency resolver does not currently take into account all the pack
ages that are installed. This behaviour is the source of the following dependency
conflicts.
torchtext 0.10.0 requires torch==1.9.0, but you have torch 1.7.0+cu110 which is in
compatible.
Successfully installed dataclasses-0.6 torch-1.7.0+cu110 torchvision-0.8.0
```

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Looking in links: https://download.openmmlab.com/mmcv/dist/cu110/torch1.6.0/index.html
Requirement already satisfied: mmcv-full in /usr/local/lib/python3.7/dist-packages (1.3.11)
Requirement already satisfied: packaging in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (21.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (1.19.5)
Requirement already satisfied: yapf in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (0.31.0)
Requirement already satisfied: Pillow in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (7.1.2)
Requirement already satisfied: addict in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (2.4.0)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (3.13)
Requirement already satisfied: pyparsing>=2.0.2 in /usr/local/lib/python3.7/dist-packages (from packaging->mmcv-full) (2.4.7)
Requirement already satisfied: mmdet in /usr/local/lib/python3.7/dist-packages (2.15.1)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.7/dist-packages (from mmdet) (3.2.2)
Requirement already satisfied: pycocotools in /usr/local/lib/python3.7/dist-packages (from mmdet) (2.0.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.7/dist-packages (from mmdet) (1.19.5)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from mmdet) (1.15.0)
Requirement already satisfied: terminaltables in /usr/local/lib/python3.7/dist-packages (from mmdet) (3.1.0)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmdet) (0.10.0)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmdet) (1.3.1)
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmdet) (2.8.2)
Requirement already satisfied: pyparsing!=2.0.4,!>=2.1.2,!>=2.1.6,>=2.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmdet) (2.4.7)
Requirement already satisfied: setuptools>=18.0 in /usr/local/lib/python3.7/dist-packages (from pycocotools->mmdet) (57.4.0)
Requirement already satisfied: cython>=0.27.3 in /usr/local/lib/python3.7/dist-packages (from pycocotools->mmdet) (0.29.24)
fatal: destination path 'mmocr' already exists and is not an empty directory.
/mmocr
Requirement already satisfied: numpy in /usr/local/lib/python3.7/dist-packages (from -r requirements/build.txt (line 2)) (1.19.5)
Requirement already satisfied: Polygon3 in /usr/local/lib/python3.7/dist-packages (from -r requirements/build.txt (line 3)) (3.0.9.1)
Requirement already satisfied: pyclipper in /usr/local/lib/python3.7/dist-packages (from -r requirements/build.txt (line 4)) (1.3.0)
Requirement already satisfied: torch>=1.1 in /usr/local/lib/python3.7/dist-packages (from -r requirements/build.txt (line 5)) (1.7.0+cu110)
Requirement already satisfied: imgaug in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 1)) (0.2.9)
Requirement already satisfied: lanms-proper in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 2)) (1.0.1)
Requirement already satisfied: lmdb in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 3)) (0.99)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 4)) (3.2.2)
Requirement already satisfied: numba>=0.45.1 in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 5)) (0.51.2)
Requirement already satisfied: rapidfuzz in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 9)) (1.5.0)
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Requirement already satisfied: scikit-image in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 10)) (0.16.2)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 11)) (1.15.0)
Requirement already satisfied: terminaltables in /usr/local/lib/python3.7/dist-packages (from -r requirements/runtime.txt (line 12)) (3.1.0)
Requirement already satisfied: asynctest in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 1)) (0.13.0)
Requirement already satisfied: codecov in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 2)) (2.1.12)
Requirement already satisfied: flake8 in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 3)) (3.9.2)
Requirement already satisfied: isort in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 4)) (5.9.3)
Requirement already satisfied: karray in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 6)) (0.5.19)
Requirement already satisfied: pytest in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 8)) (3.6.4)
Requirement already satisfied: pytest-cov in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 9)) (2.9.0)
Requirement already satisfied: pytest-runner in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 10)) (5.3.1)
Requirement already satisfied: ubelt in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 11)) (0.10.0)
Requirement already satisfied: xdoctest>=0.10.0 in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 12)) (0.15.6)
Requirement already satisfied: yapf in /usr/local/lib/python3.7/dist-packages (from -r requirements/tests.txt (line 13)) (0.31.0)
Requirement already satisfied: dataclasses in /usr/local/lib/python3.7/dist-packages (from torch>=1.1->-r requirements/build.txt (line 5)) (0.6)
Requirement already satisfied: typing-extensions in /usr/local/lib/python3.7/dist-packages (from torch>=1.1->-r requirements/build.txt (line 5)) (3.7.4.3)
Requirement already satisfied: future in /usr/local/lib/python3.7/dist-packages (from torch>=1.1->-r requirements/build.txt (line 5)) (0.16.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.7/dist-packages (from numba>=0.45.1->-r requirements/runtime.txt (line 5)) (57.4.0)
Requirement already satisfied: llvmlite<0.35,>=0.34.0.dev0 in /usr/local/lib/python3.7/dist-packages (from numba>=0.45.1->-r requirements/runtime.txt (line 5)) (0.34.0)
Requirement already satisfied: scipy in /usr/local/lib/python3.7/dist-packages (from imgaug->-r requirements/runtime.txt (line 1)) (1.4.1)
Requirement already satisfied: imageio in /usr/local/lib/python3.7/dist-packages (from imgaug->-r requirements/runtime.txt (line 1)) (2.4.1)
Requirement already satisfied: Shapely in /usr/local/lib/python3.7/dist-packages (from imgaug->-r requirements/runtime.txt (line 1)) (1.7.1)
Requirement already satisfied: opencv-python in /usr/local/lib/python3.7/dist-packages (from imgaug->-r requirements/runtime.txt (line 1)) (4.1.2.30)
Requirement already satisfied: Pillow in /usr/local/lib/python3.7/dist-packages (from imgaug->-r requirements/runtime.txt (line 1)) (7.1.2)
Requirement already satisfied: networkx>=2.0 in /usr/local/lib/python3.7/dist-packages (from scikit-image->-r requirements/runtime.txt (line 10)) (2.6.2)
Requirement already satisfied: PyWavelets>=0.4.0 in /usr/local/lib/python3.7/dist-packages (from scikit-image->-r requirements/runtime.txt (line 10)) (1.1.1)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.7/dist-packages (from matplotlib->-r requirements/runtime.txt (line 4)) (0.10.0)
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->-r requirements/runtime.txt (line 4)) (2.8.2)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->-r requirements/runtime.txt (line 4)) (1.3.1)
Requirement already satisfied: pyparsing!=2.0.4,!>=2.1.2,!>=2.1.6,>=2.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->-r requirements/runtime.txt (line 4)) (2.4.7)
Requirement already satisfied: coverage in /usr/local/lib/python3.7/dist-packages (from codecov->-r requirements/tests.txt (line 2)) (5.5)

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Requirement already satisfied: requests>=2.7.9 in /usr/local/lib/python3.7/dist-packages (from codecov->-r requirements/tests.txt (line 2)) (2.23.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests>=2.7.9->codecov->-r requirements/tests.txt (line 2)) (2021.5.30)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests>=2.7.9->codecov->-r requirements/tests.txt (line 2)) (2.10)
Requirement already satisfied: urllib3!=1.25.0,!~=1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages (from requests>=2.7.9->codecov->-r requirements/tests.txt (line 2)) (1.24.3)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests>=2.7.9->codecov->-r requirements/tests.txt (line 2)) (3.0.4)
Requirement already satisfied: pycodestyle<2.8.0,>=2.7.0 in /usr/local/lib/python3.7/dist-packages (from flake8->-r requirements/tests.txt (line 3)) (2.7.0)
Requirement already satisfied: importlib-metadata in /usr/local/lib/python3.7/dist-packages (from flake8->-r requirements/tests.txt (line 3)) (4.6.4)
Requirement already satisfied: pyflakes<2.4.0,>=2.3.0 in /usr/local/lib/python3.7/dist-packages (from flake8->-r requirements/tests.txt (line 3)) (2.3.1)
Requirement already satisfied: mccabe<0.7.0,>=0.6.0 in /usr/local/lib/python3.7/dist-packages (from flake8->-r requirements/tests.txt (line 3)) (0.6.1)
Requirement already satisfied: more-itertools>=4.0.0 in /usr/local/lib/python3.7/dist-packages (from pytest->-r requirements/tests.txt (line 8)) (8.8.0)
Requirement already satisfied: py>=1.5.0 in /usr/local/lib/python3.7/dist-packages (from pytest->-r requirements/tests.txt (line 8)) (1.10.0)
Requirement already satisfied: pluggy<0.8,>=0.5 in /usr/local/lib/python3.7/dist-packages (from pytest->-r requirements/tests.txt (line 8)) (0.7.1)
Requirement already satisfied: attrs>=17.4.0 in /usr/local/lib/python3.7/dist-packages (from pytest->-r requirements/tests.txt (line 8)) (21.2.0)
Requirement already satisfied: atomicwrites>=1.0 in /usr/local/lib/python3.7/dist-packages (from pytest->-r requirements/tests.txt (line 8)) (1.4.0)
Requirement already satisfied: ordered-set in /usr/local/lib/python3.7/dist-packages (from ubelt->-r requirements/tests.txt (line 11)) (4.0.2)
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages (from importlib-metadata->flake8->-r requirements/tests.txt (line 3)) (3.5.0)
Using pip 21.1.3 from /usr/local/lib/python3.7/dist-packages/pip (python 3.7)
Value for scheme platlib does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/lib/python3.7/dist-packages
sysconfig: /usr/lib/python3.7/site-packages
Value for scheme purelib does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/lib/python3.7/dist-packages
sysconfig: /usr/lib/python3.7/site-packages
Value for scheme headers does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/include/python3.7/UNKNOWN
sysconfig: /usr/include/python3.7m/UNKNOWN
Value for scheme scripts does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/bin
sysconfig: /usr/bin
Value for scheme data does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local
sysconfig: /usr
Additional context:
user = False
home = None
root = None
prefix = None
Non-user install because site-packages writeable
Created temporary directory: /tmp/pip-ephem-wheel-cache-fvycazpz
Created temporary directory: /tmp/pip-req-tracker-we_a93c3
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Initialized build tracking at /tmp/pip-req-tracker-we_a93c3
Created build tracker: /tmp/pip-req-tracker-we_a93c3
Entered build tracker: /tmp/pip-req-tracker-we_a93c3
Created temporary directory: /tmp/pip-install-ok1naoq0
Obtaining file:///mmocr
    Added file:///mmocr to build tracker '/tmp/pip-req-tracker-we_a93c3'
        Running setup.py (path:/mmocr/setup.py) egg_info for package from file:///mmocr
r
    Created temporary directory: /tmp/pip-pip-egg-info-rei2_m70
    Running command python setup.py egg_info
    running egg_info
    creating /tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info
    writing /tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info/PKG-INFO
    writing dependency_links to /tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info/dependency_links.txt
    writing requirements to /tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info/requirements.txt
    writing top-level names to /tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info/top_level.txt
    writing manifest file '/tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info/SOURCES.txt'
    reading manifest template 'MANIFEST.in'
    adding license file 'LICENSE'
    writing manifest file '/tmp/pip-pip-egg-info-rei2_m70/mmocr.egg-info/SOURCES.txt'
Source in /mmocr has version 0.2.1, which satisfies requirement mmocr==0.2.1 from file:///mmocr
Removed mmocr==0.2.1 from file:///mmocr from build tracker '/tmp/pip-req-tracker-we_a93c3'
Requirement already satisfied: imgaug in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (0.2.9)
Requirement already satisfied: lanms-proper in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (1.0.1)
Requirement already satisfied: lmdb in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (0.99)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (3.2.2)
Requirement already satisfied: numba>=0.45.1 in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (0.51.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (1.19.5)
Requirement already satisfied: Polygon3 in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (3.0.9.1)
Requirement already satisfied: pyclipper in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (1.3.0)
Requirement already satisfied: rapidfuzz in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (1.5.0)
Requirement already satisfied: scikit-image in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (0.16.2)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (1.15.0)
Requirement already satisfied: terminaltables in /usr/local/lib/python3.7/dist-packages (from mmocr==0.2.1) (3.1.0)
Requirement already satisfied: llvmlite<0.35,>=0.34.0.dev0 in /usr/local/lib/python3.7/dist-packages (from numba>=0.45.1->mmocr==0.2.1) (0.34.0)
Requirement already satisfied: setuptools in /usr/local/lib/python3.7/dist-packages (from numba>=0.45.1->mmocr==0.2.1) (57.4.0)
Requirement already satisfied: imageio in /usr/local/lib/python3.7/dist-packages (from imgaug->mmocr==0.2.1) (2.4.1)
Requirement already satisfied: Shapely in /usr/local/lib/python3.7/dist-packages (from imgaug->mmocr==0.2.1) (1.7.1)
Requirement already satisfied: Pillow in /usr/local/lib/python3.7/dist-packages (from imgaug->mmocr==0.2.1) (7.1.2)
Requirement already satisfied: scipy in /usr/local/lib/python3.7/dist-packages (fr
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om imgaug->mmocr==0.2.1) (1.4.1)
Requirement already satisfied: opencv-python in /usr/local/lib/python3.7/dist-packages (from imgaug->mmocr==0.2.1) (4.1.2.30)
Requirement already satisfied: networkx>=2.0 in /usr/local/lib/python3.7/dist-packages (from scikit-image->mmocr==0.2.1) (2.6.2)
Requirement already satisfied: PyWavelets>=0.4.0 in /usr/local/lib/python3.7/dist-packages (from scikit-image->mmocr==0.2.1) (1.1.1)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmocr==0.2.1) (0.10.0)
Requirement already satisfied: pyparsing!=2.0.4,!>=2.1.2,!>=2.1.6,>=2.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmocr==0.2.1) (2.4.7)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmocr==0.2.1) (1.3.1)
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->mmocr==0.2.1) (2.8.2)
Created temporary directory: /tmp/pip-unpack-khia4f7t
Installing collected packages: mmocr
  Attempting uninstall: mmocr
    Found existing installation: mmocr 0.2.1
    Not sure how to uninstall: mmocr 0.2.1 - Check: /mmocr
      Can't uninstall 'mmocr'. No files were found to uninstall.
    Value for scheme.platlib does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
      distutils: /usr/local/lib/python3.7/dist-packages
      sysconfig: /usr/lib/python3.7/site-packages
      Value for scheme.purelib does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
      distutils: /usr/local/lib/python3.7/dist-packages
      sysconfig: /usr/lib/python3.7/site-packages
      Value for scheme.headers does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
      distutils: /usr/local/include/python3.7/mmocr
      sysconfig: /usr/include/python3.7m/mmocr
      Value for scheme.scripts does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
      distutils: /usr/local/bin
      sysconfig: /usr/bin
      Value for scheme.data does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
      distutils: /usr/local
      sysconfig: /usr
      Additional context:
        user = False
        home = None
        root = None
        prefix = None
    Running setup.py develop for mmocr
      Running command /usr/bin/python3 -c 'import io, os, sys, setuptools, tokenize; sys.argv[0] = '"/mmocr/setup.py"'; __file__='"/mmocr/setup.py"';f = getattr(tokenize, 'open', open)(__file__) if os.path.exists(__file__) else io.StringIO(''from setuptools import setup; setup()''');code = f.read().replace('\\r\\n', '\\n');f.close();exec(compile(code, __file__, 'exec'))
      develop --no-deps
      running develop
      running egg_info
      writing mmocr.egg-info/PKG-INFO
      writing dependency_links to mmocr.egg-info/dependency_links.txt
      writing requirements to mmocr.egg-info/requirements.txt
      writing top-level names to mmocr.egg-info/top_level.txt
      reading manifest template 'MANIFEST.in'
      adding license file 'LICENSE'
      writing manifest file 'mmocr.egg-info/SOURCES.txt'
      running build_ext
      Creating /usr/local/lib/python3.7/dist-packages/mmocr.egg-link (link to .)
```

```
mmocr 0.2.1 is already the active version in easy-install.pth
```

```
Installed /mmocr
Value for scheme.platlib does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/lib/python3.7/dist-packages
sysconfig: /usr/lib/python3.7/site-packages
Value for scheme.purelib does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/lib/python3.7/dist-packages
sysconfig: /usr/lib/python3.7/site-packages
Value for scheme.headers does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/include/python3.7/UNKNOWN
sysconfig: /usr/include/python3.7m/UNKNOWN
Value for scheme.scripts does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local/bin
sysconfig: /usr/bin
Value for scheme.data does not match. Please report this to <https://github.com/pypa/pip/issues/9617>
distutils: /usr/local
sysconfig: /usr
Additional context:
user = False
home = None
root = None
prefix = None
Successfully installed mmocr-0.2.1
Removed build tracker: '/tmp/pip-req-tracker-we_a93c3'
```

```
In [ ]: !pip uninstall mmcv-full
!pip install mmcv-full -f https://download.openmmlab.com/mmcv/dist/cu110/torch1.6.6
```

```

Found existing installation: mmcv-full 1.3.11
Uninstalling mmcv-full-1.3.11:
Would remove:
/usr/local/lib/python3.7/dist-packages/mmcv/*
/usr/local/lib/python3.7/dist-packages/mmcv_full-1.3.11.dist-info/*
Proceed (y/n)? y
Successfully uninstalled mmcv-full-1.3.11
Looking in links: https://download.openmmlab.com/mmcv/dist/cu110/torch1.6.0/index.html
Collecting mmcv-full
    Downloading mmcv-full-1.3.11.tar.gz (307 kB)
       █████████████████████████████████████████████████████████████████████████████████| 307 kB 8.2 MB/s
Requirement already satisfied: addict in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (2.4.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (1.19.5)
Requirement already satisfied: packaging in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (21.0)
Requirement already satisfied: Pillow in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (7.1.2)
Requirement already satisfied: pyyaml in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (3.13)
Requirement already satisfied: yapf in /usr/local/lib/python3.7/dist-packages (from mmcv-full) (0.31.0)
Requirement already satisfied: pyparsing>=2.0.2 in /usr/local/lib/python3.7/dist-packages (from packaging->mmcv-full) (2.4.7)
Building wheels for collected packages: mmcv-full
  Building wheel for mmcv-full (setup.py) ... done
  Created wheel for mmcv-full: filename=mmcv_full-1.3.11-cp37-cp37m-linux_x86_64.whl size=25895154 sha256=8cedf064bd88018d0cfba49032423d19888db695f5dc98dce606653bc40d8321
  Stored in directory: /tmp/pip-ephem-wheel-cache-8t9ngi9u/wheels/4c/8f/1d/903456a291e5bf33d99cb03cb1bbc822e2c5d32c123b873ebe
Successfully built mmcv-full
Installing collected packages: mmcv-full
Successfully installed mmcv-full-1.3.11

```

Check Installed Dependencies Versions

```

In [ ]: # Check Pytorch installation
import torch, torchvision
print(torch.__version__, torch.cuda.is_available())

# Check MMDetection installation
import mmdet
print(mmdet.__version__)

# Check mmcv installation
import mmcv
from mmcv.ops import get_compiling_cuda_version, get_compiler_version
print(mmcv.__version__)
print(get_compiling_cuda_version())
print(get_compiler_version())

# Check mmocr installation
import mmocr
print(mmocr.__version__)

%cd /mmocr/
!ls

```

```
1.7.0+cu110 True
2.15.1
1.3.11
11.0
GCC 7.5
0.2.1
/mmocr
configs  docs_zh_CN  mmocr.egg-info  requirements  setup.py
demo     LICENSE      model-index.yml  requirements.txt  tests
docker   MANIFEST.in  README.md      resources      tools
docs     mmocr       README_zh-CN.md  setup.cfg
```

In []:

```
from mmocr.utils.ocr import MMOCR
mmocr = MMOCR(det=None, recog='STAR')
mmocr.readtext('demo/demo_text_recog.jpg', print_result=True, output='outputs/demo_text_recog.jpg')
```

Use load_from_http loader

/mmocr/mmocr/apis/inference.py:48: UserWarning: Class names are not saved in the checkpoint's meta data, use COCO classes by default.

```
warnings.warn('Class names are not saved in the checkpoint\'s '
{'text': 'STAR', 'score': 0.9664112031459808}
```

Out[]:

```
[{'score': 0.9664112031459808, 'text': 'STAR'}]
```

In []:

```
# Visualize the results
import matplotlib.pyplot as plt
predicted_img = mmcv.imread('./outputs/demo_text_recog_pred.jpg')
plt.imshow(mmcv.bgr2rgb(predicted_img))
plt.show()
```



In []:

```
from mmocr.utils.ocr import MMOCR
mmocr = MMOCR(det='TextSnake', recog=None)
_ = mmocr.readtext('demo/demo_text_det.jpg', output='outputs/demo_text_det.jpg')
```

In []:

```
# Visualize the results
import matplotlib.pyplot as plt
predicted_img = mmcv.imread('./outputs/demo_text_det_pred.jpg')
plt.figure(figsize=(9, 16))
plt.imshow(mmcv.bgr2rgb(predicted_img))
plt.show()
```



Perform end-to-end OCR with pretrained recognizer and detector

With the help of `ocr.py`, we can easily combine any text detector and recognizer into a pipeline that forms a standard OCR step. Now we build our own OCR pipeline with TextSnake and SAR and apply it to `demo_text_ocr.jpg`.

```
In [ ]: from mmocr.utils.ocr import MMOCR
mmocr = MMOCR(det='TextSnake', recog='SAR')
mmocr.readtext('demo/demo_text_ocr.jpg', print_result=True, output='outputs/demo_te
Use load_from_http loader
Use load_from_http loader
/mmocr/mmocr/apis/inference.py:48: UserWarning: Class names are not saved in the c
heckpoint's meta data, use COCO classes by default.
    warnings.warn('Class names are not saved in the checkpoint\'s '
/usr/local/lib/python3.7/dist-packages/mmdet/datasets/utils.py:68: UserWarning: "I
mageToTensor" pipeline is replaced by "DefaultFormatBundle" for batch inference. I
t is recommended to manually replace it in the test data pipeline in your config f
ile.
    'data pipeline in your config file.', UserWarning)
{'filename': 'demo_text_ocr', 'text': ['OCBCBANK', 'soculationists', 'sanetal.enan
ce.ounces', '70%', 'ROUND', 'SALE', 'ALLYEAR', 'is', 'SALE']}
Out[ ]: [{"filename": "demo_text_ocr",
  "text": ["OCBCBANK",
    "soculationists",
    "sanetal.enance.ounces",
    "70%",
    "ROUND",
    "SALE",
    "ALLYEAR",
    "is",
    "SALE"]}]
```

```
In [ ]: # Visualize the results
import matplotlib.pyplot as plt
predicted_img = mmocr.imread('./outputs/demo_text_ocr_pred.jpg')
plt.figure(figsize=(9, 16))
```

```
plt.imshow(mmcv.bgr2rgb(predicted_img))
plt.show()
```



Combine OCR with Downstream Tasks

MMOCR also supports downstream tasks of OCR, such as key information extraction (KIE). We can even add a KIE model, SDMG-R, to the pipeline applied to `demo_kie.jpeg` and visualize its prediction based on the OCR result.

In []:

```
# SDMGR relies on the dictionary provided in wildreceipt
# First download the KIE dataset .tar file and extract it to ./data
!mkdir data
!wget https://download.openmmlab.com/mmocr/data/wildreceipt.tar
!tar -xf wildreceipt.tar
!mv wildreceipt ./data
```

```
--2021-08-23 03:17:39-- https://download.openmmlab.com/mmocr/data/wildreceipt.tar
Resolving download.openmmlab.com (download.openmmlab.com)... 47.254.186.225
Connecting to download.openmmlab.com (download.openmmlab.com)|47.254.186.225|:44
3... connected.
HTTP request sent, awaiting response... 200 OK
Length: 185323520 (177M) [application/x-tar]
Saving to: ‘wildreceipt.tar’

wildreceipt.tar      100%[=====] 176.74M  11.2MB/s    in 16s

2021-08-23 03:17:58 (10.8 MB/s) - ‘wildreceipt.tar’ saved [185323520/185323520]
```

In []:

```
from mmocr.utils.ocr import MMOCR
mmocr = MMOCR(det='TextSnake', recog='SAR', kie='SDMGR')
mmocr.readtext('demo/demo_kie.jpeg', print_result=True, output='outputs/demo_kie_pi
```

```
Use load_from_http loader
Use load_from_http loader
```

```
/mmocr/mmocr/apis/inference.py:48: UserWarning: Class names are not saved in the checkpoint's meta data, use COCO classes by default.
```

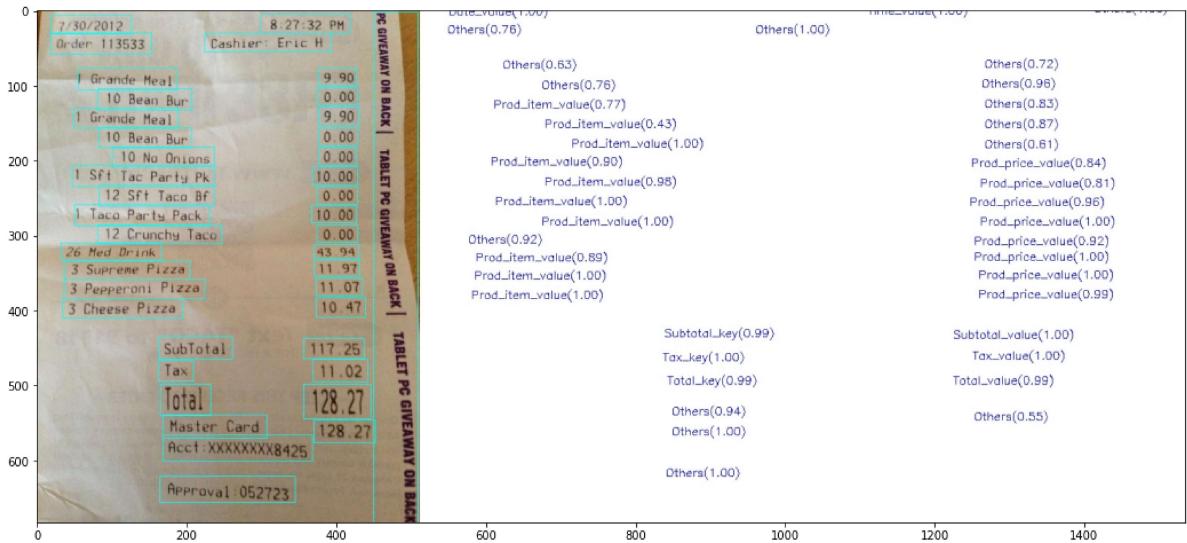
```
    warnings.warn('Class names are not saved in the checkpoint\'s '
Use load_from_http loader
```

```
/usr/local/lib/python3.7/dist-packages/mmdet/datasets/utils.py:68: UserWarning: "ImageToTensor" pipeline is replaced by "DefaultFormatBundle" for batch inference. It is recommended to manually replace it in the test data pipeline in your config file.
  'data pipeline in your config file.', UserWarning)
/mmocr/mmocr/datasets/kie_dataset.py:46: UserWarning: KIEDataset is only initialized as a downstream demo task of text detection and recognition without an annotation file.
  'without an annotation file.', UserWarning)
{'filename': 'demo_kie', 'text': ['Appraisal:052723', 'Acct:Xexexxx8425', '128.27', 'Master', '128.27', 'Total', 'Tax', '11.02', '117.25', 'subTotal', 'Cheese', '10.47', '3.Perreroni', '11.07', '3Supreme', '11.97', '26', '43.94', '0.00', '12.Crunchy.Taco', '10.00', 'SLACOMPARTY', '0.00', '12SFTTACO', '10.00', 'SFtt.Tac.Party.', '0.00', 'MONODELONS', '0.00', '10.Bean', 'Grande', '9.90', 'Beatean', '0.00', 'grande', '9.90', 'Order-113533', 'Cashier:.Eric', '7/30/2012', '8:27:32', '=Article-I.D.:']}}

Out[ ]: [{"filename": "demo_kie",
  "text": ["Appraisal:052723",
    "Acct:Xexexxx8425",
    "128.27",
    "Master",
    "128.27",
    "Total",
    "Tax",
    "11.02",
    "117.25",
    "subTotal",
    "Cheese",
    "10.47",
    "3.Perreroni",
    "11.07",
    "3Supreme",
    "11.97",
    "26",
    "43.94",
    "0.00",
    "12.Crunchy.Taco",
    "10.00",
    "SLACOMPARTY",
    "0.00",
    "12SFTTACO",
    "10.00",
    "SFtt.Tac.Party.",
    "0.00",
    "MONODELONS",
    "0.00",
    "10.Bean",
    "Grande",
    "9.90",
    "Beatean",
    "0.00",
    "grande",
    "9.90",
    "Order-113533",
    "Cashier:.Eric",
    "7/30/2012",
    "8:27:32",
    "=Article-I.D.:"]}]}

In [ ]: # Visualize the results
import matplotlib.pyplot as plt
predicted_img = mmcv.imread('./outputs/demo_kie_pred.jpg')
plt.figure(figsize=(18, 32))
```

```
plt.imshow(mmcv.bgr2rgb(predicted_img))
plt.show()
```



Perform Testing with a Pretrained KIE Model

We perform testing on the WildReceipt dataset for KIE model by first downloading the .tar file from [Datasets Preparation](#) in MMOCR documentation and then extract the dataset. We have chosen the Visual + Textual modality test dataset, which we evaluate with Macro F1 metrics.

```
In [ ]: # Can skip this step if you have downloaded wildreceipt in the last section
# Download the KIE dataset .tar file and extract it to ./data
!mkdir data
!wget https://download.openmmlab.com/mmocr/data/wildreceipt.tar
!tar -xf wildreceipt.tar
!mv wildreceipt ./data
```

```
--2021-05-17 11:39:10-- https://download.openmmlab.com/mmocr/data/wildreceipt.tar
Resolving download.openmmlab.com (download.openmmlab.com)... 47.75.20.25
Connecting to download.openmmlab.com (download.openmmlab.com)|47.75.20.25|:443...
connected.
HTTP request sent, awaiting response... 200 OK
Length: 185323520 (177M) [application/x-tar]
Saving to: 'wildreceipt.tar.3'

wildreceipt.tar.3    100%[=====] 176.74M  17.7MB/s   in 10s

2021-05-17 11:39:21 (17.1 MB/s) - 'wildreceipt.tar.3' saved [185323520/185323520]
```

```
In [ ]: # Test the dataset with macro f1 metrics
!python tools/test.py configs/kie/sdmgr/sdmgr_unet16_60e_wildreceipt.py https://do
Use load_from_http loader
Downloading: "https://download.openmmlab.com/mmocr/kie/sdmgr/sdmgr_unet16_60e_wild
receipt_20210405-16a47642.pth" to /root/.cache/torch/hub/checkpoints/sdmgr_unet16_
60e_wildreceipt_20210405-16a47642.pth
100% 18.4M/18.4M [00:01<00:00, 10.2MB/s]
[>>] 472/472, 21.1 task/s, elapsed: 22s, ETA:      0s{'macro_f1': 0.87641114}
```

```
In [ ]: import mmcv
import matplotlib.pyplot as plt

img = mmcv.imread('./tests/data/ocr_toy_dataset/imgs/1036169.jpg')
```

```
plt.imshow(mmcv.bgr2rgb(img))
plt.show()
```



In []: # Inspect the Labels of the annotation file
!cat tests/data/ocr_toy_dataset/label.txt

```
1223731.jpg GRAND
1223733.jpg HOTEL
1223732.jpg HOTEL
1223729.jpg PACIFIC
1036169.jpg 03/09/2009
1190237.jpg ANING
1058891.jpg Virgin
1058892.jpg america
1240078.jpg ATTACK
1210236.jpg DAVIDSON
```

Modify the Configuration File

In order to perform inference for SAR on colab, we need to modify the config file to accommodate some of the settings of colab such as the number of GPU available.

In []: `from mmcv import Config
cfg = Config.fromfile('./configs/textrecog/sar/sar_r31_parallel_decoder_toy_dataset')`

In []: `from mmdet.apis import set_random_seed

Set up working dir to save files and logs.
cfg.work_dir = './demo/tutorial_exps'

The original Learning rate (LR) is set for 8-GPU training.
We divide it by 8 since we only use one GPU.
cfg.optimizer.lr = 0.001 / 8
cfg.lr_config.warmup = None
Choose to log training results every 40 images to reduce the size of log file.
cfg.log_config.interval = 40

Set seed thus the results are more reproducible
cfg.seed = 0
set_random_seed(0, deterministic=False)
cfg.gpu_ids = range(1)

We can initialize the Logger for training and have a look
at the final config used for training
print(f'Config:\n{cfg.pretty_text}')`

```

Config:
checkpoint_config = dict(interval=1)
log_config = dict(interval=40, hooks=[dict(type='TextLoggerHook')])
dist_params = dict(backend='nccl')
log_level = 'INFO'
load_from = None
resume_from = None
workflow = [('train', 1)]
label_convertor = dict(
    type='AttnConvertor', dict_type='DICT90', with_unknown=True)
model = dict(
    type='SARNet',
    backbone=dict(type='ResNet310CR'),
    encoder=dict(
        type='SAREncoder', enc_bi_rnn=False, enc_do_rnn=0.1, enc_gru=False),
    decoder=dict(
        type='ParallelSARDecoder',
        enc_bi_rnn=False,
        dec_bi_rnn=False,
        dec_do_rnn=0,
        dec_gru=False,
        pred_dropout=0.1,
        d_k=512,
        pred_concat=True),
    loss=dict(type='SARLoss'),
    label_convertor=dict(
        type='AttnConvertor', dict_type='DICT90', with_unknown=True),
    max_seq_len=30)
optimizer = dict(type='Adam', lr=0.000125)
optimizer_config = dict(grad_clip=None)
lr_config = dict(policy='step', step=[3, 4], warmup=None)
total_epochs = 5
img_norm_cfg = dict(mean=[0.5, 0.5, 0.5], std=[0.5, 0.5, 0.5])
train_pipeline = [
    dict(type='LoadImageFromFile'),
    dict(
        type='ResizeOCR',
        height=48,
        min_width=48,
        max_width=160,
        keep_aspect_ratio=True),
    dict(type='ToTensorOCR'),
    dict(type='NormalizeOCR', mean=[0.5, 0.5, 0.5], std=[0.5, 0.5, 0.5]),
    dict(
        type='Collect',
        keys=['img'],
        meta_keys=[
            'filename', 'ori_shape', 'resize_shape', 'text', 'valid_ratio'
        ])
]
test_pipeline = [
    dict(type='LoadImageFromFile'),
    dict(
        type='ResizeOCR',
        height=48,
        min_width=48,
        max_width=160,
        keep_aspect_ratio=True),
    dict(type='ToTensorOCR'),
    dict(type='NormalizeOCR', mean=[0.5, 0.5, 0.5], std=[0.5, 0.5, 0.5]),
    dict(
        type='Collect',
        keys=['img'],
        meta_keys=[

]

```

```

        'filename', 'ori_shape', 'resize_shape', 'valid_ratio',
        'img_norm_cfg', 'ori_filename'
    ])
]
dataset_type = 'OCRDataset'
img_prefix = 'tests/data/ocr_toy_dataset/imgs'
train_anno_file1 = 'tests/data/ocr_toy_dataset/label.txt'
train1 = dict(
    type='OCRDataset',
    img_prefix='tests/data/ocr_toy_dataset/imgs',
    ann_file='tests/data/ocr_toy_dataset/label.txt',
    loader=dict(
        type='HardDiskLoader',
        repeat=100,
        parser=dict(
            type='LineStrParser',
            keys=['filename', 'text'],
            keys_idx=[0, 1],
            separator=' '),
        pipeline=None,
        test_mode=False)
    train_anno_file2 = 'tests/data/ocr_toy_dataset/label.lmdb'
    train2 = dict(
        type='OCRDataset',
        img_prefix='tests/data/ocr_toy_dataset/imgs',
        ann_file='tests/data/ocr_toy_dataset/label.lmdb',
        loader=dict(
            type='LmdbLoader',
            repeat=100,
            parser=dict(
                type='LineStrParser',
                keys=['filename', 'text'],
                keys_idx=[0, 1],
                separator=' '),
            pipeline=None,
            test_mode=False)
        test_anno_file1 = 'tests/data/ocr_toy_dataset/label.lmdb'
        test = dict(
            type='OCRDataset',
            img_prefix='tests/data/ocr_toy_dataset/imgs',
            ann_file='tests/data/ocr_toy_dataset/label.lmdb',
            loader=dict(
                type='LmdbLoader',
                repeat=10,
                parser=dict(
                    type='LineStrParser',
                    keys=['filename', 'text'],
                    keys_idx=[0, 1],
                    separator=' '),
                pipeline=None,
                test_mode=True)
            data = dict(
                workers_per_gpu=2,
                samples_per_gpu=8,
                train=dict(
                    type='UniformConcatDataset',
                    datasets=[
                        dict(
                            type='OCRDataset',
                            img_prefix='tests/data/ocr_toy_dataset/imgs',
                            ann_file='tests/data/ocr_toy_dataset/label.txt',
                            loader=dict(
                                type='HardDiskLoader',
                                repeat=100,

```

```

        parser=dict(
            type='LineStrParser',
            keys=['filename', 'text'],
            keys_idx=[0, 1],
            separator=' '),
        pipeline=None,
        test_mode=False),
    dict(
        type='OCRDataset',
        img_prefix='tests/data/ocr_toy_dataset/imgs',
        ann_file='tests/data/ocr_toy_dataset/label.lmdb',
        loader=dict(
            type='LmdbLoader',
            repeat=100,
            parser=dict(
                type='LineStrParser',
                keys=['filename', 'text'],
                keys_idx=[0, 1],
                separator=' ')),
        pipeline=None,
        test_mode=False)
    ],
    pipeline=[
        dict(type='LoadImageFromFile'),
        dict(
            type='ResizeOCR',
            height=48,
            min_width=48,
            max_width=160,
            keep_aspect_ratio=True),
        dict(type='ToTensorOCR'),
        dict(
            type='NormalizeOCR', mean=[0.5, 0.5, 0.5], std=[0.5, 0.5, 0.5]),
        dict(
            type='Collect',
            keys=['img'],
            meta_keys=[
                'filename', 'ori_shape', 'resize_shape', 'text',
                'valid_ratio'
            ])
    ],
    val=dict(
        type='UniformConcatDataset',
        datasets=[
            dict(
                type='OCRDataset',
                img_prefix='tests/data/ocr_toy_dataset/imgs',
                ann_file='tests/data/ocr_toy_dataset/label.lmdb',
                loader=dict(
                    type='LmdbLoader',
                    repeat=10,
                    parser=dict(
                        type='LineStrParser',
                        keys=['filename', 'text'],
                        keys_idx=[0, 1],
                        separator=' ')),
                pipeline=None,
                test_mode=True)
        ],
        pipeline=[
            dict(type='LoadImageFromFile'),
            dict(
                type='ResizeOCR',

```

```

        height=48,
        min_width=48,
        max_width=160,
        keep_aspect_ratio=True),
    dict(type='ToTensorOCR'),
    dict(
        type='NormalizeOCR', mean=[0.5, 0.5, 0.5], std=[0.5, 0.5,
                                                0.5]),
    dict(
        type='Collect',
        keys=['img'],
        meta_keys=[
            'filename', 'ori_shape', 'resize_shape', 'valid_ratio',
            'img_norm_cfg', 'ori_filename'
        ]
    ),
    test=dict(
        type='UniformConcatDataset',
        datasets=[
            dict(
                type='OCRDataset',
                img_prefix='tests/data/ocr_toy_dataset/imgs',
                ann_file='tests/data/ocr_toy_dataset/label.lmdb',
                loader=dict(
                    type='LmdbLoader',
                    repeat=10,
                    parser=dict(
                        type='LineStrParser',
                        keys=['filename', 'text'],
                        keys_idx=[0, 1],
                        separator=' ')
                ),
                pipeline=None,
                test_mode=True)
        ],
        pipeline=[
            dict(type='LoadImageFromFile'),
            dict(
                type='ResizeOCR',
                height=48,
                min_width=48,
                max_width=160,
                keep_aspect_ratio=True),
            dict(type='ToTensorOCR'),
            dict(
                type='NormalizeOCR', mean=[0.5, 0.5, 0.5], std=[0.5, 0.5,
                                                                0.5]),
            dict(
                type='Collect',
                keys=['img'],
                meta_keys=[
                    'filename', 'ori_shape', 'resize_shape', 'valid_ratio',
                    'img_norm_cfg', 'ori_filename'
                ]
            )
        ])
    evaluation = dict(interval=1, metric='acc')
    work_dir = './demo/tutorial_exps'
    seed = 0
    gpu_ids = range(0, 1)

```

Train the SAR Text Recognizer

Finally, we train the SAR text recognizer on the toy dataset for five epochs.

```
In [ ]: from mmocr.datasets import build_dataset
from mmocr.models import build_detector
from mmocr.apis import train_detector
import os.path as osp

# Build dataset
datasets = [build_dataset(cfg.data.train)]

# Build the detector
model = build_detector(
    cfg.model, train_cfg=cfg.get('train_cfg'), test_cfg=cfg.get('test_cfg'))
# Add an attribute for visualization convenience
model.CLASSES = datasets[0].CLASSES

# Create work_dir
mmcv.mkdir_or_exist(osp.abspath(cfg.work_dir))
train_detector(model, datasets, cfg, distributed=False, validate=True)
```

```

/mmocr/mmocr/apis/train.py:80: UserWarning: config is now expected to have a `runner` section, please set `runner` in your config.
  'please set `runner` in your config.', UserWarning)
2021-08-23 03:27:59,310 - mmocr - INFO - Start running, host: root@0c6e7899740e, w
ork_dir: /mmocr/demo/tutorial_exps
2021-08-23 03:27:59,311 - mmocr - INFO - Hooks will be executed in the following o
rder:
before_run:
(VERY_HIGH    ) StepLrUpdaterHook
(NORMAL       ) CheckpointHook
(NORMAL       ) EvalHook
(VERY_LOW     ) TextLoggerHook
-----
before_train_epoch:
(VERY_HIGH    ) StepLrUpdaterHook
(NORMAL       ) EvalHook
(LOW          ) IterTimerHook
(VERY_LOW     ) TextLoggerHook
-----
before_train_iter:
(VERY_HIGH    ) StepLrUpdaterHook
(NORMAL       ) EvalHook
(LOW          ) IterTimerHook
-----
after_train_iter:
(ABOVE_NORMAL) OptimizerHook
(NORMAL       ) CheckpointHook
(NORMAL       ) EvalHook
(LOW          ) IterTimerHook
(VERY_LOW     ) TextLoggerHook
-----
after_train_epoch:
(NORMAL       ) CheckpointHook
(NORMAL       ) EvalHook
(VERY_LOW     ) TextLoggerHook
-----
before_val_epoch:
(LOW          ) IterTimerHook
(VERY_LOW     ) TextLoggerHook
-----
before_val_iter:
(LOW          ) IterTimerHook
-----
after_val_iter:
(LOW          ) IterTimerHook
-----
after_val_epoch:
(VERY_LOW     ) TextLoggerHook
-----
2021-08-23 03:27:59,313 - mmocr - INFO - workflow: [('train', 1)], max: 5 epochs
2021-08-23 03:28:11,809 - mmocr - INFO - Epoch [1][40/250]      lr: 1.250e-04, et
a: 0:06:16, time: 0.312, data_time: 0.054, memory: 2149, loss_ce: 3.1350, loss: 3.
1350
2021-08-23 03:28:22,325 - mmocr - INFO - Epoch [1][80/250]      lr: 1.250e-04, et
a: 0:05:36, time: 0.263, data_time: 0.002, memory: 2149, loss_ce: 2.0554, loss: 2.
0554
2021-08-23 03:28:32,623 - mmocr - INFO - Epoch [1][120/250]      lr: 1.250e-04, et
a: 0:05:13, time: 0.257, data_time: 0.002, memory: 2149, loss_ce: 1.3114, loss: 1.
3114
2021-08-23 03:28:42,724 - mmocr - INFO - Epoch [1][160/250]      lr: 1.250e-04, et
a: 0:04:55, time: 0.253, data_time: 0.002, memory: 2149, loss_ce: 0.9297, loss: 0.
9297
2021-08-23 03:28:52,679 - mmocr - INFO - Epoch [1][200/250]      lr: 1.250e-04, et
a: 0:04:39, time: 0.249, data_time: 0.002, memory: 2149, loss_ce: 0.7357, loss: 0.

```

7357
 2021-08-23 03:29:02,564 - mmocr - INFO - Epoch [1][240/250] lr: 1.250e-04, et
 a: 0:04:26, time: 0.247, data_time: 0.002, memory: 2149, loss_ce: 0.5924, loss: 0.
 5924
 2021-08-23 03:29:05,069 - mmocr - INFO - Saving checkpoint at 1 epochs
 [>>>>>>>>>>>>>>] 100/100, 15.6 task/s, elapsed: 6s, ETA: 0s

2021-08-23 03:29:13,961 - mmocr - INFO -
 Evaluateing tests/data/ocr_toy_dataset/label.lmdb with 100 images now
 2021-08-23 03:29:13,975 - mmocr - INFO - Epoch(val) [1][13] 0_word_acc: 0.900
 0, 0_word_acc_ignore_case: 0.9000, 0_word_acc_ignore_case_symbol: 0.9000, 0_char_r
 ecall: 0.9355, 0_char_precision: 0.9062, 0_1-N.E.D: 0.9000
 2021-08-23 03:29:26,001 - mmocr - INFO - Epoch [2][40/250] lr: 1.250e-04, et
 a: 0:04:08, time: 0.300, data_time: 0.054, memory: 2149, loss_ce: 0.4840, loss: 0.
 4840
 2021-08-23 03:29:36,000 - mmocr - INFO - Epoch [2][80/250] lr: 1.250e-04, et
 a: 0:03:57, time: 0.250, data_time: 0.002, memory: 2149, loss_ce: 0.3639, loss: 0.
 3639
 2021-08-23 03:29:46,164 - mmocr - INFO - Epoch [2][120/250] lr: 1.250e-04, et
 a: 0:03:46, time: 0.254, data_time: 0.002, memory: 2149, loss_ce: 0.3488, loss: 0.
 3488
 2021-08-23 03:29:56,310 - mmocr - INFO - Epoch [2][160/250] lr: 1.250e-04, et
 a: 0:03:36, time: 0.254, data_time: 0.002, memory: 2149, loss_ce: 0.3102, loss: 0.
 3102
 2021-08-23 03:30:06,387 - mmocr - INFO - Epoch [2][200/250] lr: 1.250e-04, et
 a: 0:03:25, time: 0.252, data_time: 0.002, memory: 2149, loss_ce: 0.3109, loss: 0.
 3109
 2021-08-23 03:30:16,397 - mmocr - INFO - Epoch [2][240/250] lr: 1.250e-04, et
 a: 0:03:14, time: 0.250, data_time: 0.002, memory: 2149, loss_ce: 0.3027, loss: 0.
 3027
 2021-08-23 03:30:18,939 - mmocr - INFO - Saving checkpoint at 2 epochs
 [>>>>>>>>>>>>>>] 100/100, 15.4 task/s, elapsed: 6s, ETA: 0s

2021-08-23 03:30:27,896 - mmocr - INFO -
 Evaluateing tests/data/ocr_toy_dataset/label.lmdb with 100 images now
 2021-08-23 03:30:27,903 - mmocr - INFO - Epoch(val) [2][13] 0_word_acc: 0.900
 0, 0_word_acc_ignore_case: 0.9000, 0_word_acc_ignore_case_symbol: 0.9000, 0_char_r
 ecall: 0.9355, 0_char_precision: 0.9062, 0_1-N.E.D: 0.9000
 2021-08-23 03:30:39,993 - mmocr - INFO - Epoch [3][40/250] lr: 1.250e-04, et
 a: 0:03:00, time: 0.301, data_time: 0.054, memory: 2149, loss_ce: 0.2920, loss: 0.
 2920
 2021-08-23 03:30:49,971 - mmocr - INFO - Epoch [3][80/250] lr: 1.250e-04, et
 a: 0:02:50, time: 0.249, data_time: 0.002, memory: 2149, loss_ce: 0.2860, loss: 0.
 2860
 2021-08-23 03:30:59,999 - mmocr - INFO - Epoch [3][120/250] lr: 1.250e-04, et
 a: 0:02:40, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2801, loss: 0.
 2801
 2021-08-23 03:31:10,073 - mmocr - INFO - Epoch [3][160/250] lr: 1.250e-04, et
 a: 0:02:29, time: 0.252, data_time: 0.002, memory: 2149, loss_ce: 0.2863, loss: 0.
 2863
 2021-08-23 03:31:20,139 - mmocr - INFO - Epoch [3][200/250] lr: 1.250e-04, et
 a: 0:02:19, time: 0.252, data_time: 0.002, memory: 2149, loss_ce: 0.2881, loss: 0.
 2881
 2021-08-23 03:31:30,175 - mmocr - INFO - Epoch [3][240/250] lr: 1.250e-04, et
 a: 0:02:09, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2644, loss: 0.
 2644
 2021-08-23 03:31:32,719 - mmocr - INFO - Saving checkpoint at 3 epochs
 [>>>>>>>>>>>>>>] 100/100, 15.3 task/s, elapsed: 7s, ETA: 0s

```

2021-08-23 03:31:41,616 - mmocr - INFO -
Evaluateing tests/data/ocr_toy_dataset/label.lmdb with 100 images now
2021-08-23 03:31:41,622 - mmocr - INFO - Epoch(val) [3][13]      0_word_acc: 1.000
0, 0_word_acc_ignore_case: 1.0000, 0_word_acc_ignore_case_symbol: 1.0000, 0_char_r
ecall: 1.0000, 0_char_precision: 1.0000, 0_1-N.E.D: 1.0000
2021-08-23 03:31:53,746 - mmocr - INFO - Epoch [4][40/250]      lr: 1.250e-05, et
a: 0:01:56, time: 0.302, data_time: 0.054, memory: 2149, loss_ce: 0.2739, loss: 0.
2739
2021-08-23 03:32:03,736 - mmocr - INFO - Epoch [4][80/250]      lr: 1.250e-05, et
a: 0:01:46, time: 0.250, data_time: 0.002, memory: 2149, loss_ce: 0.2507, loss: 0.
2507
2021-08-23 03:32:13,784 - mmocr - INFO - Epoch [4][120/250]      lr: 1.250e-05, et
a: 0:01:36, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2563, loss: 0.
2563
2021-08-23 03:32:23,840 - mmocr - INFO - Epoch [4][160/250]      lr: 1.250e-05, et
a: 0:01:25, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2738, loss: 0.
2738
2021-08-23 03:32:33,902 - mmocr - INFO - Epoch [4][200/250]      lr: 1.250e-05, et
a: 0:01:15, time: 0.252, data_time: 0.002, memory: 2149, loss_ce: 0.2401, loss: 0.
2401
2021-08-23 03:32:43,940 - mmocr - INFO - Epoch [4][240/250]      lr: 1.250e-05, et
a: 0:01:05, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2558, loss: 0.
2558
2021-08-23 03:32:46,493 - mmocr - INFO - Saving checkpoint at 4 epochs
[>>>>>>>>>>>>>>>] 100/100, 15.4 task/s, elapsed: 6s, ETA:      0s
2021-08-23 03:32:55,484 - mmocr - INFO -
Evaluateing tests/data/ocr_toy_dataset/label.lmdb with 100 images now
2021-08-23 03:32:55,492 - mmocr - INFO - Epoch(val) [4][13]      0_word_acc: 1.000
0, 0_word_acc_ignore_case: 1.0000, 0_word_acc_ignore_case_symbol: 1.0000, 0_char_r
ecall: 1.0000, 0_char_precision: 1.0000, 0_1-N.E.D: 1.0000
2021-08-23 03:33:07,613 - mmocr - INFO - Epoch [5][40/250]      lr: 1.250e-06, et
a: 0:00:52, time: 0.302, data_time: 0.054, memory: 2149, loss_ce: 0.2637, loss: 0.
2637
2021-08-23 03:33:17,612 - mmocr - INFO - Epoch [5][80/250]      lr: 1.250e-06, et
a: 0:00:42, time: 0.250, data_time: 0.002, memory: 2149, loss_ce: 0.2344, loss: 0.
2344
2021-08-23 03:33:27,652 - mmocr - INFO - Epoch [5][120/250]      lr: 1.250e-06, et
a: 0:00:32, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2523, loss: 0.
2523
2021-08-23 03:33:37,712 - mmocr - INFO - Epoch [5][160/250]      lr: 1.250e-06, et
a: 0:00:22, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2391, loss: 0.
2391
2021-08-23 03:33:47,752 - mmocr - INFO - Epoch [5][200/250]      lr: 1.250e-06, et
a: 0:00:12, time: 0.251, data_time: 0.002, memory: 2149, loss_ce: 0.2556, loss: 0.
2556
2021-08-23 03:33:57,763 - mmocr - INFO - Epoch [5][240/250]      lr: 1.250e-06, et
a: 0:00:02, time: 0.250, data_time: 0.002, memory: 2149, loss_ce: 0.2495, loss: 0.
2495
2021-08-23 03:34:00,311 - mmocr - INFO - Saving checkpoint at 5 epochs
[>>>>>>>>>>>>>>] 100/100, 15.4 task/s, elapsed: 6s, ETA:      0s
2021-08-23 03:34:09,084 - mmocr - INFO -
Evaluateing tests/data/ocr_toy_dataset/label.lmdb with 100 images now
2021-08-23 03:34:09,090 - mmocr - INFO - Epoch(val) [5][13]      0_word_acc: 1.000
0, 0_word_acc_ignore_case: 1.0000, 0_word_acc_ignore_case_symbol: 1.0000, 0_char_r
ecall: 1.0000, 0_char_precision: 1.0000, 0_1-N.E.D: 1.0000

```

Test and Visualize the Predictions

For completeness, we also perform testing on the latest checkpoint and evaluate the results with hmean-iou metrics. The predictions are saved in the ./outputs file.

```
In [ ]: from mmocr.apis import init_detector, model_inference

img = './tests/data/ocr_toy_dataset/imgs/1036169.jpg'
checkpoint = "./demo/tutorial_exps/epoch_5.pth"
out_file = 'outputs/1036169.jpg'

model = init_detector(cfg, checkpoint, device="cuda:0")
if model.cfg.data.test['type'] == 'ConcatDataset':
    model.cfg.data.test.pipeline = model.cfg.data.test['datasets'][0].pipeline

result = model_inference(model, img)
print(f'result: {result}')

img = model.show_result(
    img, result, out_file=out_file, show=False)

mmcv.imwrite(img, out_file)
```

Use load_from_local loader
 result: {'text': '03/09/2009', 'score': [0.9998674392700195, 0.9986717700958252, 0.9974325299263, 0.9999891519546509, 0.9976925849914551, 0.9968488812446594, 0.997633695602417, 0.9999977350234985, 0.999995231628418, 0.9993376135826111]}

Out[]: True

```
In [ ]: # Visualize the results
predicted_img = mmcv.imread('./outputs/1036169.jpg')
plt.figure(figsize=(4, 4))
plt.imshow(mmcv.bgr2rgb(predicted_img))
plt.show()
```

