

Manual

This manual guides a reproduction of main experiment results. For data production, please refer to the Data_guide.pdf shipped in the OSOCR-data repo.

I. Setting up environments.

Step 1. Install a clean Manjaro Linux (Archlinux should do as well)

Step 2. Configure mirror, update the system, install a building requirements and reboot via

```
sudo pacman -Syu pybind11 unzip vim; reboot
```

Step3A. Install PyTorch, Pycharm

```
sudo pacman -S pycharm-community-edition python-pytorch-cuda
```

Step3B. While waiting, grab the code, data, and the modified pylcs.

1) Grab the data from kaggle (<https://www.kaggle.com/vsdf2898kaggle/osocrtraining>):

CVPR2016.zip, NIPS2014.zip, ssddata_2.zip, ctwcheval.zip, ssddata_1.tar.gz, ssddata.tar.gz

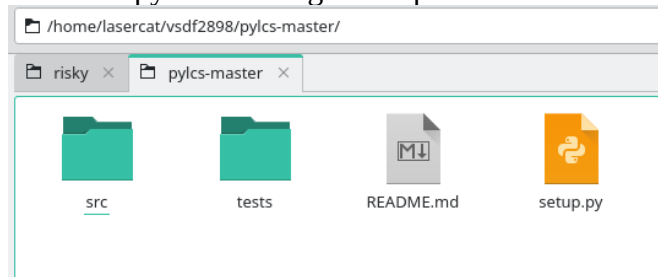
2) Unzip & remove the packages.

```
for i in $(ls | grep zip); do unzip $i; done
tar -xvf ssddata_1.tar.gz;
tar -xvf ssddata.tar.gz
mkdir ../packs; mv *.* ../packs;
```

3) While waiting, install the modded pylcs .

<https://github.com/lancercat/VSDF/blob/master/pylcs-master-getlcs.zip>

a. Extract pylcs-master-getlcs.zip



b. Run setup.py

```
python setup.py install --user
```

4) Collect models.

Step 3C. Stop and check if you have all the following folders

Data:

```
[lasercat@lasercat-proj260 osocrdata]$ ls
artdb_seen  ctwcheval  CUTE80    dicts     IC13_1015  lsvtdb_seen  mltrjp_hori  NIPS2014  rctwtrdb_seen
ctwch       ctwdb_seen  CVPR2016  IC03_867  IIIT5k_3000  mltrchlat_seen  mltrkr_hori  pami_ch_fsl_hwdb  SVT
```

Models:

```
[lasercat@lasercat-proj260 prfinal]$ ls
ablative  ctw_extra  hwdb  models  revision_extra
```

Step 4. Fix ffmpeg bug and install torchvision (to think it's still buggy... =_=)

```
wget https://codeload.github.com/pytorch/vision/tar.gz/refs/tags/v0.12.0
```

```
tar -xvf v0.12.0
```

```
vim +349 setup.py
```

```
if sys.platform != "linux" or (sys.version_info.major == 3 and sys.version_info.minor >= 9):
```

```
python setup.py install --user
```

Step 5. Reboot your PC and Install other dependencies:

a) Via pacman

```
sudo pacman -S python-lmdb scipy python-opencv python-regex python-matplotlib
```

```
sudo pacman -S python-editdistance
```

b) Via Pip

```
pip install torch-scatter
```

Note that you may have trouble building CUDA support of torch-scatter if you did not reboot

II. Evaluate the Trained models.

1. Zero-shot Chinese character recognition

CTW dataset (ZSL)

CTW			
# characters in training set			
500	1000	1500	2000
28.03	49.00	58.37	64.03

basic_ctwch_CE_alter/testg2.py

```
test accuracy:
Accuracy: 0.280333, AR: 0.280333, CER: 0.719667, WER: 0.719667
97591
500 Done

Accuracy: 0.583753, AR: 0.583753, CER: 0.416247, WER: 0.416247
97591
1500 Done

Accuracy: 0.490035, AR: 0.490035, CER: 0.509965, WER: 0.509965
97591
1000 Done

Accuracy: 0.640387, AR: 0.640387, CER: 0.359613, WER: 0.359613
97591
2000 Done
```

CTW dataset (OSTR)

	CTW			
#NIC	50	100	200	250
#NOC	450	400	300	250
A(NIC)	79.3	77.1	72.6	69.6
R(NOC)	73.3	54.7	37.7	31.5
P(NOC)	98.9	95.9	92.4	88.6
F(NOC)	84.2	69.7	53.5	46.5

basic_ctwch_CE_alter/testg2-rej.py

```
test rej accuracy:
KACR: 0.793193, URCL: 0.733016, UPRE 0.989458, F 0.842147
97591
dictrej50.pt Done

test rej accuracy:
KACR: 0.771495, URCL: 0.547913, UPRE 0.959210, F 0.697440
97591
dictrej100.pt Done

test rej accuracy:
KACR: 0.726157, URCL: 0.377160, UPRE 0.924411, F 0.53573
97591
dictrej200.pt Done

test rej accuracy:
KACR: 0.696198, URCL: 0.315216, UPRE 0.886503, F 0.465068
97591
dictrej250.pt Done
```

HWDB dataset (ZSL)

basic_hwdb_CE_alter/testg2.py

HWDB			
# characters in training set			
500	1000	1500	2000
47.92	74.02	81.11	85.72

```
Accuracy: 0.479248, AR: 0.479231, CER: 0.520769, WER: 0.520752
59777
500 Done

Accuracy: 0.740285, AR: 0.740285, CER: 0.259715, WER: 0.259715
59777
1000 Done

Accuracy: 0.811064, AR: 0.811064, CER: 0.188936, WER: 0.188936
59777
1500 Done

Accuracy: 0.857253, AR: 0.857253, CER: 0.142747, WER: 0.142747
59777
2000 Done
```

HWDB dataset(OSTR)

basic_hwdb_CE_alter/testg2-rej.py

	HWDB			
#NIC	100	200	400	500
#NOC	900	800	600	500
A(NIC)	93.5	93.9	91.0	90.0
R(NOC)	48.0	24.6	7.9	5.1
P(NOC)	99.7	99.5	97.9	96.7
F(NOC)	64.8	39.5	14.6	9.7

```
KACR: 0.935008, URCL: 0.480737, UPRE 0.997340, F 0.64875
59777
dictrej100.pt Done

KACR: 0.939931, URCL: 0.246738, UPRE 0.995697, F 0.395475
59777
dictrej200.pt Done

KACR: 0.910422, URCL: 0.079130, UPRE 0.979634, F 0.146432
59777
dictrej400.pt Done

test rej accuracy:
KACR: 0.900278, URCL: 0.051198, UPRE 0.967130, F 0.097248
59777
dictrej500.pt Done
```

Close-set (Regular) basic_mjst_CE_alter/test.py

The screenshot shows a VS Code editor with a Python script named 'test.py' open. The script is part of a project called 'basic_mjst_CE_alter'. The script defines a 'runner' object and calls 'runner.test_all(root)'. The output of the script is displayed in the 'Run' panel, showing a table of results for different models and datasets. The table has columns for the model name, accuracy, and error rate. The 'Ours' model achieves the highest accuracy (90.40) and the lowest error rate (0.00412385).

Model	Accuracy	Error Rate
Ours	90.40	0.00412385
-	83.92	0.00296359
MJ+ST	91.00	0.00262729
N	90.24	0.00262729
90.40	82.29	0.00262729
83.92	91.00	0.00262729
91.00	90.24	0.00262729
90.24	82.29	0.00262729
82.29	90.40	0.00262729

The screenshot shows a VS Code editor with a Python script named `test.py` and a terminal window. The script is a test runner for various models. The terminal shows the execution of the script, displaying accuracy, AR, CER, and WER for different models and configurations.

Python Script (test.py):

```

1  #-----Begin-----
2  #-----Begin-----
3  #-----Begin-----
4  #-----Begin-----
5  #-----Begin-----
6  #-----Begin-----
7  #-----Begin-----
8  #-----Begin-----
9  #-----Begin-----
10 #-----Begin-----
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96 #-----Begin-----
97 #-----Begin-----
98 #-----Begin-----
99 #-----Begin-----
100 #-----Begin-----

```

Terminal Output:

```

Run: test.py
0.00577161212/621968 288
CUTE
Accuracy: 0.868056, AR: 0.919749, CER: 0.080251, WER: 0.131944
288
0.003864766041437785 3000
IIIT5k
Accuracy: 0.926333, AR: 0.968171, CER: 0.031829, WER: 0.073667
3000
0.0044927014818147305 647
SVT
Accuracy: 0.882535, AR: 0.956533, CER: 0.043467, WER: 0.117465
647
0.004284319993121401 867
IC03
Accuracy: 0.934256, AR: 0.972692, CER: 0.027308, WER: 0.065744
867
0.00447620640834564 1015
IC13
Accuracy: 0.937931, AR: 0.978483, CER: 0.021517, WER: 0.062069
1015

```

3. Open-set Text Recognition

Name	C_{test}^i	C_{test}^o	$ C_{test}^i $	LA	R	P	F
GZSL	Unique Kanji, Shared Kanji, Kana, Latin	\emptyset	1460	30.83	-	-	-
OSR w/o SOC	Shared Kanji, Latin	Unique Kanji, Kana	849	74.35	11.27	98.28	20.23
OSR with SOC	Shared Kanji	Unique Kanji, Kana, Latin	787	80.28	25.15	99.26	40.13
GOSR	Shared Kanji, Unique Kanji, Latin	Kana	1301	56.03	3.03	63.52	5.78
OSTR	Shared Kanji, Unique Kanji	Kana, Latin	1239	58.57	24.46	93.78	38.80

GZSL

basict_chsHSCQA_CE_alter/test-jap.py

```

View Navigate Code Refactor Run Tools Git Window Help
neko_2020nocr \ dan \ methods_pr \ basict_chsHSCQA_CE_alter \ test-jap.py
ject ▾ test-jap-rej.py * basft_chsH
  bench-jap.py 5
  cfigs_scene.py 6
  cfigs_scene_open.py 7
  test-jap.py 8
  test-jap-rej.py 9
  test-kr.py 10
  test_open.py 11
  > basft_mjstcqa_CE_alter 12
  > basic_chsHS_C_alter 13
  > basic_chsHS_CE_alter 14
  > basic_chsHS_C_alter 15
test-jap
/usr/bin/python3 /home/lasercat/cat/eval_wcki_collection/OSOCF
basict_chsHSCQA_CE_alter
own PC?
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
/usr/lib/python3.10/site-packages/torch/utils/data/dataloader
warnings.warn(_create_warning_msg(
/usr/lib/python3.10/site-packages/torch/nn/functional.py:4193:
warnings.warn(
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
OSR (w/o KUC)
0.004098143355154759 4009

test rej accuracy:
KACR: 0.743537,URCL:0.112755, UPRE 0.982808, F 0.202300
4009
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
OSR (with KUC)
0.004098732813297766 4009

test rej accuracy:
KACR: 0.802817,URCL:0.251549, UPRE 0.992665, F 0.401384
4009
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
GOSR (w/o KUC)
0.004156268246603833 4009

test rej accuracy:
KACR: 0.560395,URCL:0.030303, UPRE 0.635294, F 0.057847
4009
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
GOSR (with KUC)
0.004229023082501932 4009

test rej accuracy:
KACR: 0.585774,URCL:0.244635, UPRE 0.937843, F 0.388048
4009

Process finished with exit code 0

```

Others:

basict_chsHSCQA_CE_alter/test-jap-rej.py

```

Run: test-jap-rej
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
/usr/lib/python3.10/site-packages/torch/utils/data/dataloader
warnings.warn(_create_warning_msg(
/usr/lib/python3.10/site-packages/torch/nn/functional.py:4193:
warnings.warn(
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
OSR (w/o KUC)
0.004098143355154759 4009

test rej accuracy:
KACR: 0.743537,URCL:0.112755, UPRE 0.982808, F 0.202300
4009
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
OSR (with KUC)
0.004098732813297766 4009

test rej accuracy:
KACR: 0.802817,URCL:0.251549, UPRE 0.992665, F 0.401384
4009
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
GOSR (w/o KUC)
0.004156268246603833 4009

test rej accuracy:
KACR: 0.560395,URCL:0.030303, UPRE 0.635294, F 0.057847
4009
own PC?
mkdir: cannot create directory '/ssddata/pamidump/trained_mod
DEBUG-SDFGASDFGSDGASFGSD 0.3
preparing done
GOSR (with KUC)
0.004229023082501932 4009

test rej accuracy:
KACR: 0.585774,URCL:0.244635, UPRE 0.937843, F 0.388048
4009

```

Details:

chjapmoar/accr_folder.py (make sure you have results from basict_chsHSCQA_CE_alter/test-jap.py)

Name	Sample Requires	Sample Excludes	CA(%)	LA(%)
Shared Kanji	Shared Kanji	Unique Kanji, Kana	85.69	73.21
Unique Kanji	Unique Kanji	Kana	76.50	40.87
All Kanji	Unique Kanji or Shared Kanji	Kana	79.94	54.91
Kana	Hiragana or Katakana		25.10	0.72
All			54.03	30.83

```
Connected to pydev debugger (build 221.5591.52)
/run/media/lasercat/20615BC32265B955/prfinal/chs-japxl/
Accuracy: 0.308306, AR: 0.486013, CER: 0.513987, WER: 0.691694
Overall 0.5403113212380896 0.3083063108006984
/run/media/lasercat/20615BC32265B955/prfinal/chs-japxl/
Accuracy: 0.732161, AR: 0.856908, CER: 0.143092, WER: 0.267839
Seen 0.8112844997463888 0.7321613236814891
/run/media/lasercat/20615BC32265B955/prfinal/chs-japxl/
Accuracy: 0.408730, AR: 0.765065, CER: 0.234935, WER: 0.591270
Unique Kanji 0.7549325410039688 0.4087301587301587
/run/media/lasercat/20615BC32265B955/prfinal/chs-japxl/
Accuracy: 0.549169, AR: 0.799458, CER: 0.200542, WER: 0.450831
All Kanji 0.7794014876155192 0.5491692860350247
/run/media/lasercat/20615BC32265B955/prfinal/chs-japxl/
Accuracy: 0.007295, AR: 0.251016, CER: 0.748984, WER: 0.992705
Kana 0.24151569804923498 0.007295173961840628
Ours&54.03/30.83&&81.13/73.22&75.49/40.87&77.94/54.92&24.15/0.73\\

Process finished with exit code 0
```