PLASS-NIA 인공지능학습데이터구축사업 (2021)

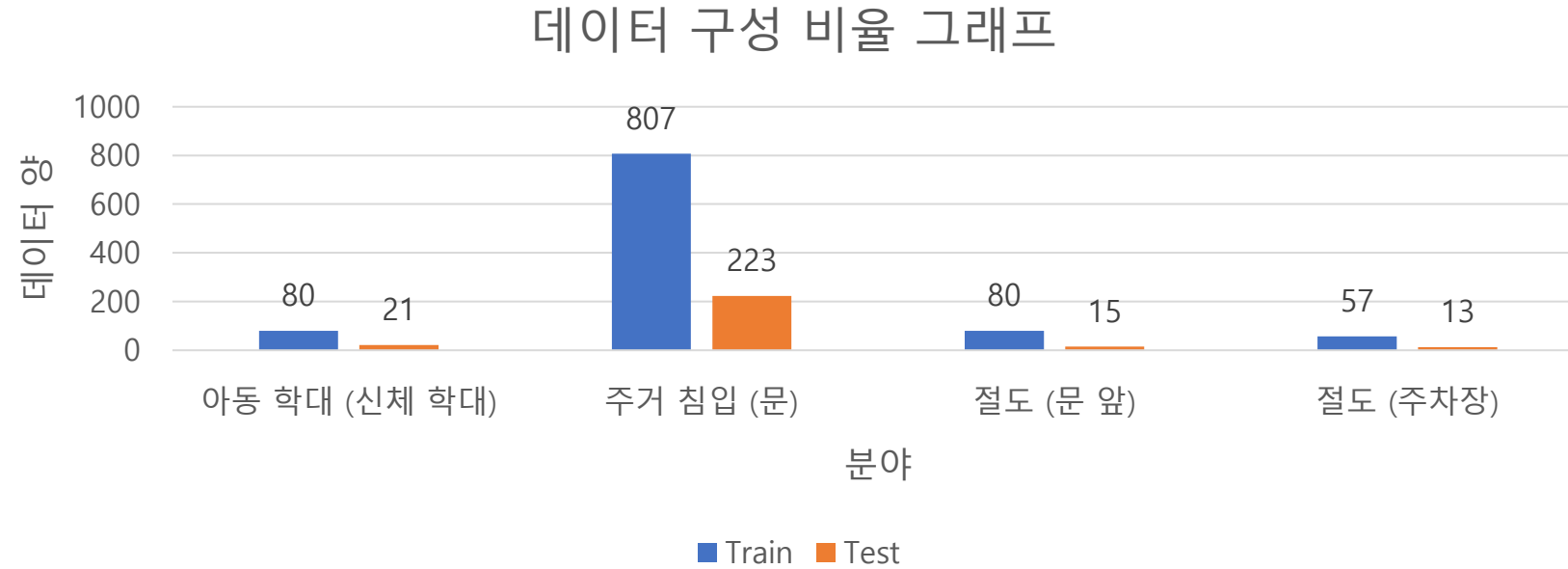4팀(김도현, 전은성)

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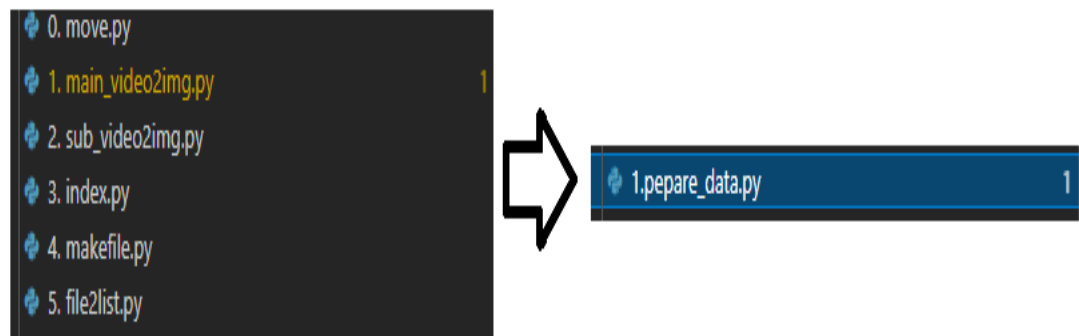
1. E2ON 학습데이터

데이터 구성 비율 그래프

- E2ON데이터 추가확인(추가X)

2. 코드 수정(전처리 코드 함수화 및 단순화)

- 6개의 파일로 나누어져 있던 학습 전 전처리 과정을 하나의 파일로 단순화 진행

- 각각의 6개의 파일은 새로 만들어진 파일의 함수로써 작동

2. 코드 수정(전처리 코드 함수화 및 단순화)

```python
def sub_action_search(sub_action):
    if sub_action=='A01':
        sub_action_name='Child is alone.'
    elif sub_action=='A05':
        sub_action_name='Stroller left unattended.'
    elif sub_action=='A06':
        sub_action_name='Push the stroller hard.'
    elif sub_action=='A07':
        sub_action_name='Hold the stroller with your feet.'
    elif sub_action=='A08':
        sub_action_name='Pulled the stroller down hard.'
    elif sub_action=='A14':
        sub_action_name='Adult throws a child.'
```

```
0/ A01/
1/ A05/
2/ A06/          ⇨
3/ A07/
4/ A08/
5/ A14/
```

```
0/ A01/ Child is alone.
1/ A05/ Stroller left unattended.
2/ A06/ Push the stroller hard.
3/ A07/ Hold the stroller with your feet.
4/ A08/ Pulled the stroller down hard.
5/ A14/ Adult throws a child.
```

```
1    0: A01: Child is alone.
2    1: A05: Stroller left unattended.
3    2: A06: Push the stroller hard.
4    3: A07: Hold the stroller with your feet.
5    4: A08: Pulled the stroller down hard.
```

- 기존에 방식으로는 인덱스 파일을 생성 후 sub_action_name을 추가

- Sub_action_search 함수를 추가하여 인덱스 파일 생성과 함께 추가

2. 코드 수정(전처리 코드 함수화 및 단순화)

```python
def main():
    #video_path, data_path 만 수정
    video_path='/workspace/NIA/NIA_AI_DATASET_2021-C3D/ALL_E2ON' #영상이 저장되어있는 경로
    data_path='/workspace/NIA/NIA_AI_DATASET_2021-C3D/ALL_E2ON_Data_10.26' #학습데이터가 저장될 경로
```

- 메인 함수의 video_path 와 data_path 지정 => 수행 가능

2. 코드 수정(학습 코드 단순화)

```
def main():
    img_path = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/E2ON_Data/imgsav/'
    train_file = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/E2ON_Data/input/train_list.txt'
    test_file = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/E2ON_Data/input/test_list.txt'
    save_path = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/E2ON_Data/result/'
```
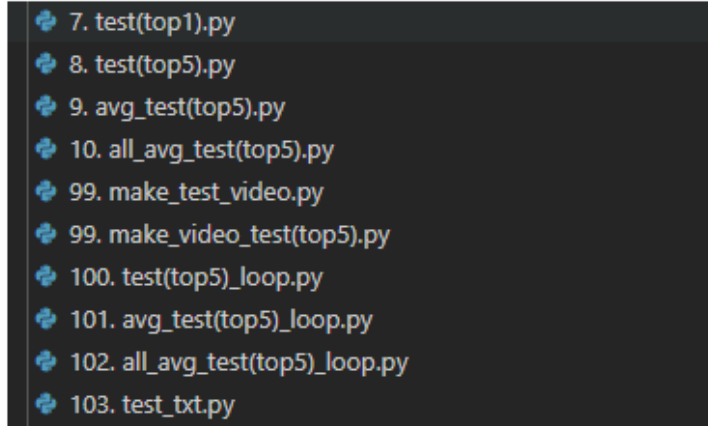
```
def main():
    data_path = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/ALL_E2ON_Data_10.25'
    #학습데이터가 저장되어있는 경로로 설정
    field='main'
    #학습할 분야가 메인(main)/서브(sub) 중에서 선택
```

- 기존의 4가지 경로를 정해줘야 하는 코드에서 학습데이터가 저장된 한가지 경로와 학습이 될 분야를 지정하면 수행가능

2. 코드 수정(테스트 코드 단순화)

- 테스트 코드 중 지금까지 가장 많이 쓰였던 top5검출과 그 결과를 txt파일에 출력 그리고 총 검출 결과를 txt에 출력하는 3가지 방법을 간추려 코드를 단순화

2. 코드 수정(테스트 코드 단순화)

```
video_path = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/ALL_E2ON'
#영상이 저장되어 있는 경로
test_video='ChildAbuse(PhysicalAbuse)/C012_A07_SY13_P03_B02_01DBS.mp4'
#테스트 할 영상
data_path = '/workspace/NIA/NIA_AI_DATASET_2021-C3D/ALL_E2ON_Data_10.25'
#학습 데이터가 저장되어 있는 경로
```

- Video_path와 test_video 그리고 data_path 지정 => 수행가능

3. 테스트(1. prepare_data.py)
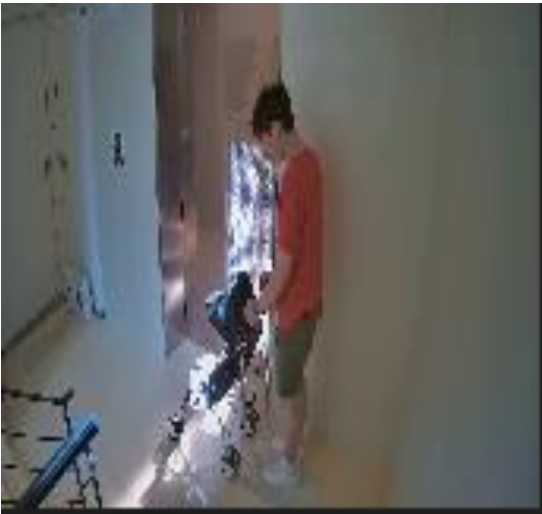
Testfile.txt

```
1   sub_test_img/A01/C042_A31_SY29_P09_B01_01DBS_A1 0
2   sub_test_img/A01/C042_A31_SY29_P09_B01_02DAS_A1 0
3   sub_test_img/A05/C012_A05_SY13_P03_B02_01DAS_A05 1
4   sub_test_img/A05/C012_A05_SY13_P03_B02_01DBS_A05 1
5   sub_test_img/A05/C012_A05_SY13_P03_B02_02DBS_A05 1
6   sub_test_img/A05/C012_A05_SY13_P07_B01_02DAS_A05 1
7   sub_test_img/A05/C012_A05_SY13_P07_B02_02NAS_A05 1
8   sub_test_img/A05/C012_A05_SY13_P07_B02_02NBS_A05 1
9   sub_test_img/A06/C012_A06_SY13_P01_B01_01DBS_A06 2
10  sub_test_img/A06/C012_A06_SY13_P01_B03_01DAS_A06 2
11  sub_test_img/A06/C012_A06_SY13_P03_B01_02DAS_A06 2
12  sub_test_img/A06/C012_A06_SY13_P03_B02_01DBS_A06 2
13  sub_test_img/A06/C012_A06_SY13_P06_B01_01DAS_A06 2
14  sub_test_img/A06/C012_A06_SY13_P06_B02_02DBS_A06 2
15  sub_test_img/A07/C012_A07_SY13_P03_B02_01DAS_A07 3
16  sub_test_img/A07/C012_A07_SY13_P03_B02_01DBS_A07 3
17  sub_test_img/A07/C012_A07_SY13_P06_B01_01DBS_A07 3
18  sub_test_img/A07/C012_A07_SY13_P07_B02_01NAS_A07 3
19  sub_test_img/A08/C012_A08_SY13_P01_B01_01DAS_A08 4
20  sub_test_img/A08/C012_A08_SY13_P01_B02_01DBS_A08 4
21  sub_test_img/A08/C012_A08_SY13_P03_B02_02DBS_A08 4
22  sub_test_img/A08/C012_A08_SY13_P06_B02_01DAS_A08 4
23  sub_test_img/A08/C012_A08_SY13_P07_B01_01DBS_A08 4
24  sub_test_img/A16/C021_A17_SY32_P07_B13_01NAS_A16 6
25  sub_test_img/A17/C021_A17_SY15_P01_B02_01DAS_A17 7
26  sub_test_img/A17/C021_A17_SY15_P01_B02_01DBS_A17 7
27  sub_test_img/A17/C021_A17_SY15_P01_B10_01DAS_A17 7
28  sub_test_img/A17/C021_A17_SY15_P01_B10_01DBS_A17 7
29  sub_test_img/A17/C021_A17_SY15_P07_B01_01DBS_A17 7
```

Index.txt

```
0: A01: Child is alone.
1: A05: Stroller left unattended.
2: A06: Push the stroller hard.
3: A07: Hold the stroller with your feet.
4: A08: Pulled the stroller down hard.
5: A14: Adult throws a child.
6: A16: Overturn the stroller.
7: A17: Pacing around.
8: A18: Trying to open the door lock.
9: A19: kick the door.
10: A20: Trying to look inside the door.
11: A21: Knocked on the door.
12: A29: Hitting with tools.
13: A30: Stealing packages.
14: A31: Hanging around in front of a car.
15: N0: Normal behavior.
16: N1: Normal behavior.
17: SY13: A kid is in a stroller.
18: SY14: A child is walking around.
19: SY15: A person is pacing around the door.
20: SY16: A person is standing around the door.
21: SY17: A person is sitting around the door.
22: SY25: A person is pacing in front of the package.
23: SY26: A person is standing around the delivery.
24: SY28: A person standing in front of a car.
25: SY29: A person is standing around a car.
26: SY30: A person is sitting around a car.
27: SY31: A person is leaning against the door.
28: SY32: A person is leaning against a wall (or pole).
```

## ALL_E2ON_Data_10.25
- input
- main_test_img
- main_train_img
- sub_test_img
- sub_train_img
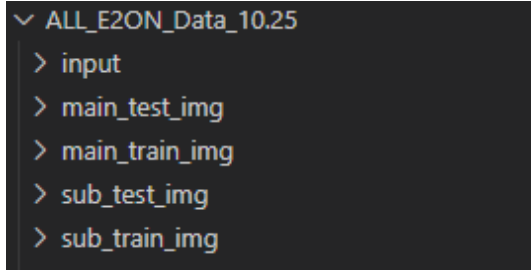
데이터셋 이미지

3. 테스트(2. trainC3D.py)

ALL_E2ON_Data_10.25

> main_result

main_result / epoch10
- model_acc.png
- model_loss.png
- result.txt
- weights_c3d.h5
> main_test_img
> main_train_img
> sub_result
> sub_test_img
> sub_train_img

	epoch	loss	acc	val_loss	val_acc
1					
2	0	2.2488326258794347	0.964267106634248	0.2009035155977834	0.9895969855832241
3	1	0.22770594097065736	0.9821378951024662	0.22307701216300224	0.9867463958060289
4	2	0.2220583382705385	0.9835576589093435	0.23871958106951507	0.9801769331585846
5	3	0.21014006002034608	0.9852596387634596	0.22562760266220272	0.98535386317169
6	4	0.14538798414250967	0.9950503647099688	0.13364187187440743	0.992300131061599
7	5	0.12592618663036065	0.9949982632858632	0.13118829240297428	0.9921690694626475
8	6	0.1207662018011452	0.9950720736366794	0.13351111710071564	0.9909239842726081
9	7	0.11850334703197658	0.9951328586314693	0.12503713977719666	0.9914318479685452
10	8	0.11140460658711085	0.9965699895797152	0.11907216504821615	0.992840760157274
11	9	0.10940409067056792	0.9968044459881903	0.12161130472763806	0.9931847968545217

> sub_result

sub_result / epoch10
- model_acc.png
- model_loss.png
- result.txt
- weights_c3d.h5
> sub_test_img
> sub_train_img
> test_10.26 / ChildAbuse(PhysicalAbuse)
- C012_A07_SY13_P03_B02_01DBS_test.mp4
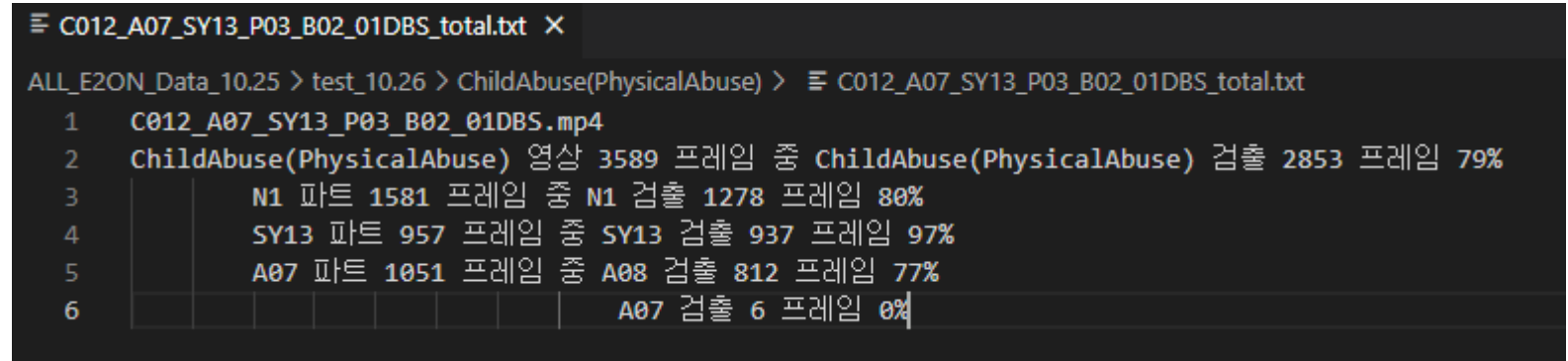- C012_A07_SY13_P03_B02_01DBS_test.txt

|	epoch	loss	acc	val_loss	val_acc
1					
2	0	4.386001282269946	0.3343728222996516	2.181888134298342	0.5307816197738627
3	1	2.1082534808481195	0.5970426829268293	2.037021577405265	0.6415330002629503
4	2	2.0088979222051773	0.6555357142857143	2.0261223289234964	0.659265711280568
5	3	1.9708151309498512	0.6757012195121951	1.9818540001241527	0.665182093084407
6	4	1.3779431475247241	0.8043728222996516	1.3393841424867288	0.7808966605311596
7	5	1.20472930814331	0.822630662020906	1.29103415566559	0.7877991059689718
8	6	1.1678720084964607	0.8304311846689896	1.2886243817870817	0.7850874309755457
9	7	1.153011773729158	0.8341419860627177	1.3544625628944325	0.7683243491980016
10	8	1.0268331209417003	0.8725783972125436	1.1798956914697858	0.8247436234551669
11	9	0.9891397418959216	0.8791289198606271	1.1477968731648729	0.8271101761767026

3. 테스트(3. test(top5).py)
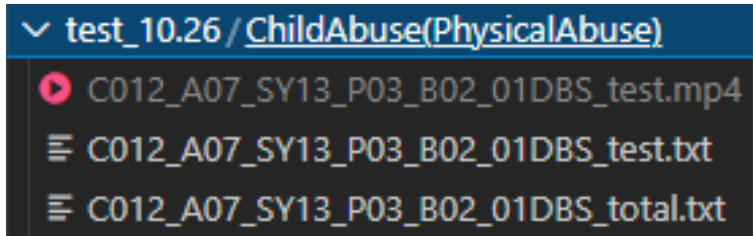
C012_A07_SY13_P03_B02_01DBS_total.txt

C012_A07_SY13_P03_B02_01DBS_test.mp4
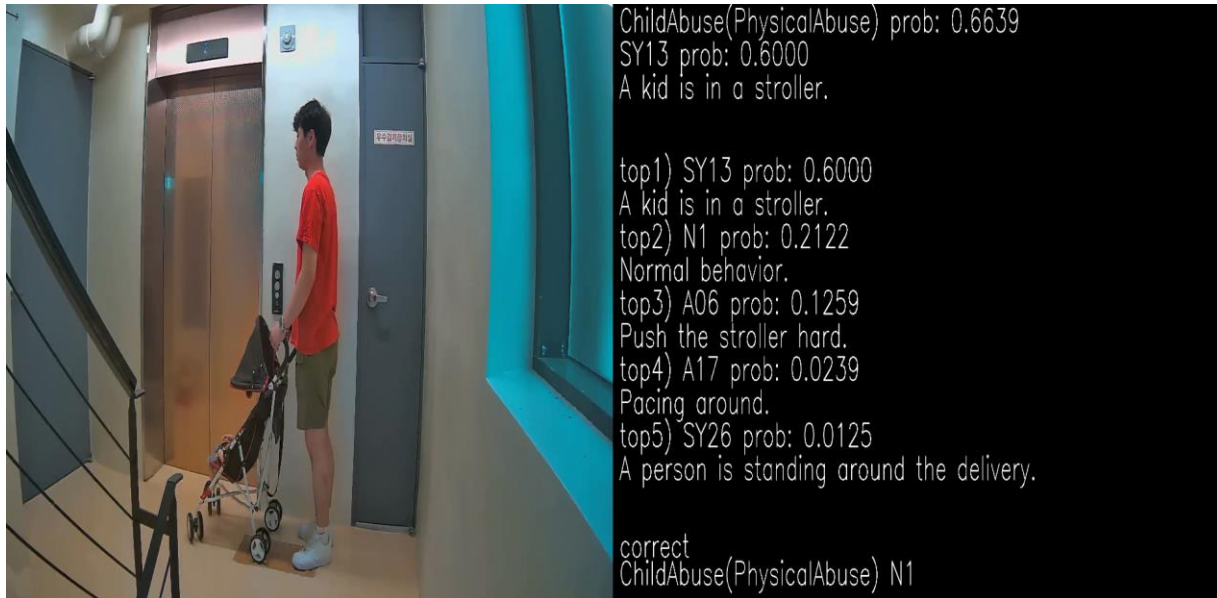
C012_A07_SY13_P03_B02_01DBS_test.txt
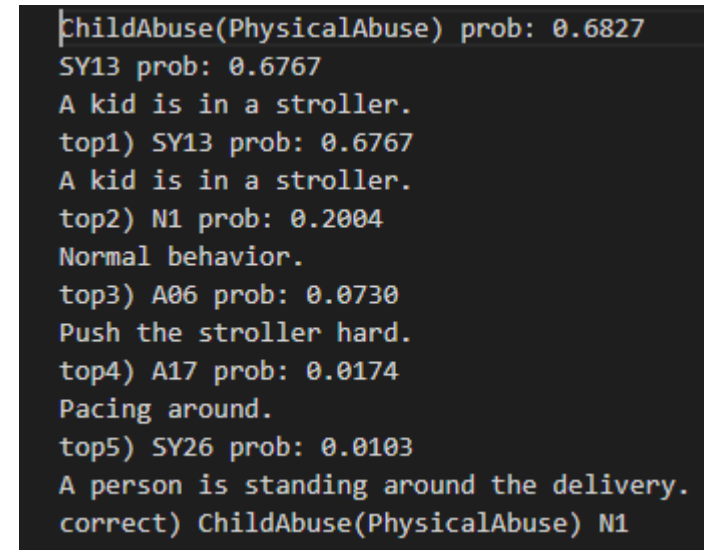
4. 향후 계획

- 새로 제작된 E2ON영상으로 데이터셋 추가

- 추가된 데이터셋으로 학습 진행

- 테스트 결과 확인

감사합니다

4팀(김도현, 전은성)