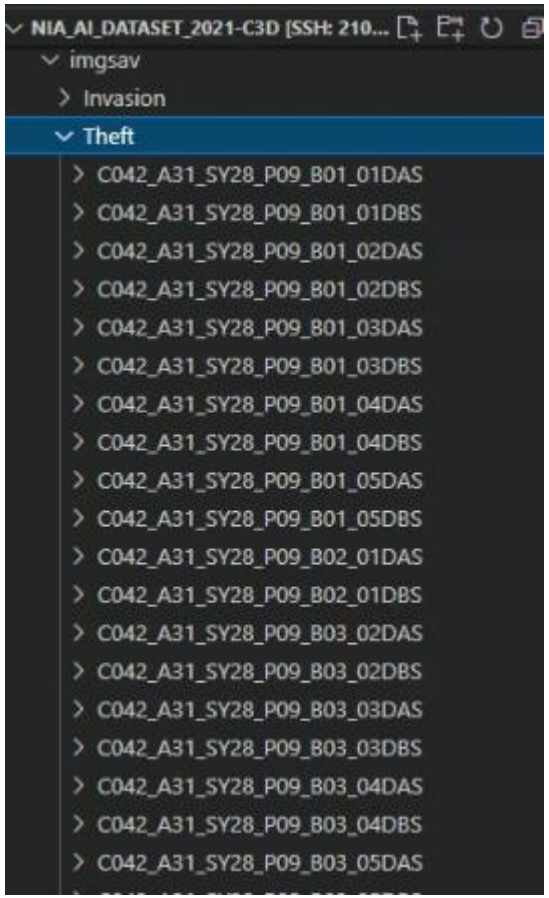
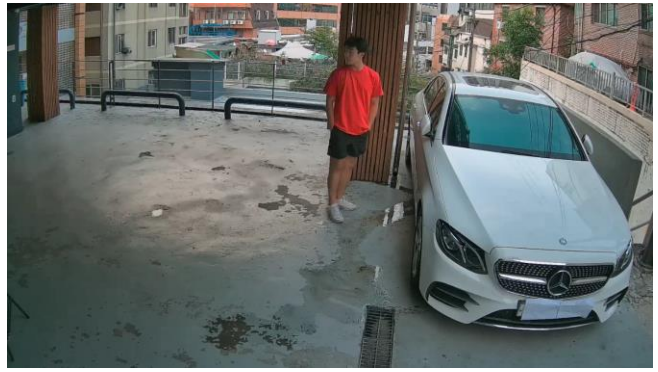
# PLASS-NIA 인공지능학습데이터구축사업 (2021)

4팀(김도현, 전은성)

# 목차

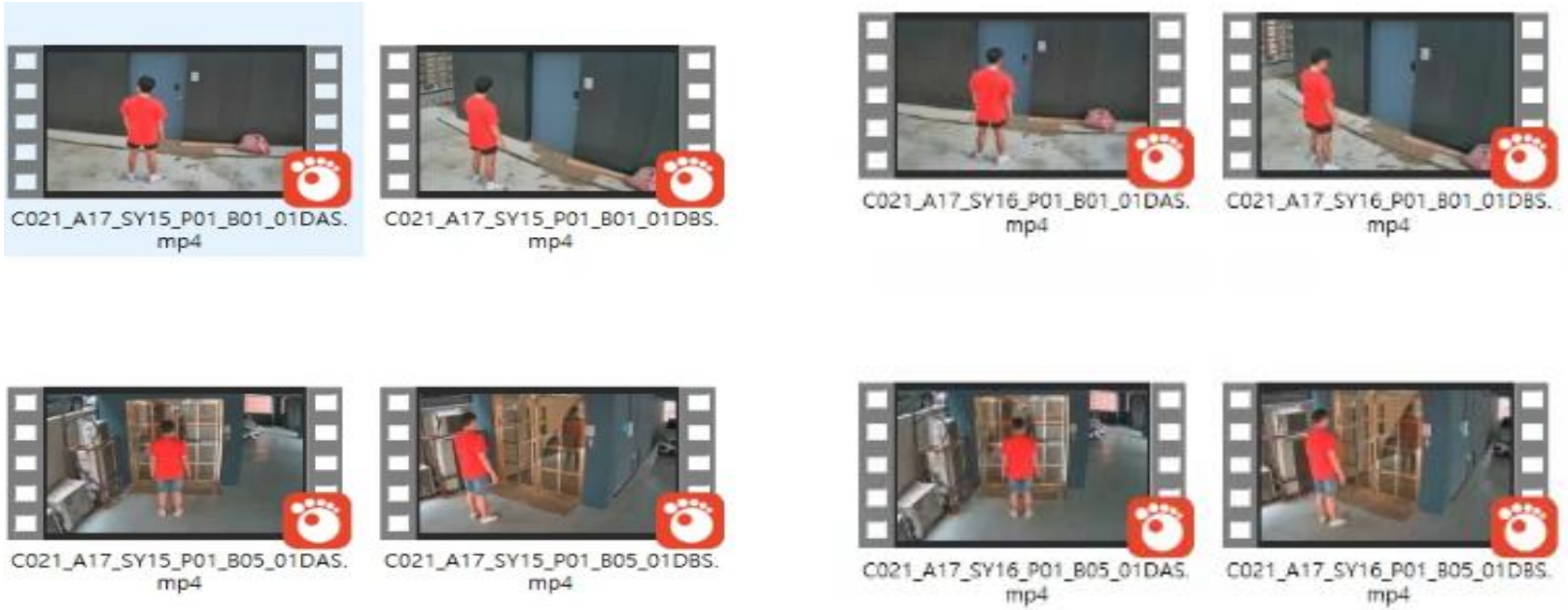
# 1. E2ON 학습데이터



- 절도, 침입 영상에서  이미지 추출
- 해당 이미지를 데이터셋으로 활용

# 1. E2ON 학습데이터




- 침입 702개의 영상은 학습 시키 힘들다고 판단
- 체크 결과 조금씩 다르지만 같은 장소 같은 구도에서 찍은 영상을 다수 발견
- 장소가 다르거나 구도가 다른 42개의 영상만 선정-
- 침입 영상의 개수에 맞춰서 절도영상도 42개 선정

# 1. E2ON 학습데이터

trainfile.txt

E2ON_Data > input > trainfile.txt

```
Invasion/C021_A17_SY15_P01_B01_01DAS 0
Invasion/C021_A17_SY15_P01_B01_01DBS 0
Invasion/C021_A17_SY15_P01_B02_01DAS 0
Invasion/C021_A17_SY15_P01_B02_01DBS 0
Invasion/C021_A17_SY15_P01_B03_01NAS 0
Invasion/C021_A17_SY15_P01_B03_01NBS 0
Invasion/C021_A17_SY15_P01_B04_01DAS 0
Invasion/C021_A17_SY15_P01_B04_01DBS 0
Invasion/C021_A17_SY15_P01_B05_01DAS 0
Invasion/C021_A17_SY15_P01_B05_01DBS 0
Invasion/C021_A17_SY15_P01_B06_01DAS 0
Invasion/C021_A17_SY15_P01_B06_01DBS 0
Invasion/C021_A17_SY15_P01_B07_01DAS 0
Invasion/C021_A17_SY15_P01_B07_01DBS 0
Invasion/C021_A17_SY15_P01_B08_01DAS 0
Invasion/C021_A17_SY15_P01_B08_01DBS 0
Invasion/C021_A17_SY15_P01_B09_01DAS 0
Invasion/C021_A17_SY15_P01_B09_01DBS 0
Invasion/C021_A17_SY15_P01_B10_01DAS 0
Invasion/C021_A17_SY15_P01_B10_01DBS 0
Invasion/C021_A17_SY15_P01_B11_01DAS 0
Invasion/C021_A17_SY15_P01_B11_01DBS 0
Invasion/C021_A17_SY15_P07_B01_01DAS 0
Invasion/C021_A17_SY15_P07_B01_01DBS 0
Invasion/C021_A17_SY15_P07_B02_01DAS 0
Invasion/C021_A17_SY15_P07_B02_01DBS 0
Invasion/C021_A17_SY15_P07_B03_01DAS 0
Invasion/C021_A17_SY15_P07_B03_01DBS 0
Invasion/C021_A17_SY15_P07_B04_01DAS 0
Invasion/C021_A17_SY15_P07_B04_01DBS 0
Invasion/C021_A17_SY15_P07_B05_01DAS 0
Theft/C042_A31_SY28_P09_B01_01DAS 1
Theft/C042_A31_SY28_P09_B01_01DBS 1
Theft/C042_A31_SY28_P09_B01_02DAS 1
Theft/C042_A31_SY28_P09_B01_02DBS 1
Theft/C042_A31_SY28_P09_B01_03DAS 1
Theft/C042_A31_SY28_P09_B01_03DBS 1
```

trainlist.txt (62개)

testfile.txt

E2ON_Data > input > testfile.txt

```
Invasion/C021_A17_SY15_P07_B05_01DBS 0
Invasion/C021_A17_SY15_P07_B06_01DAS 0
Invasion/C021_A17_SY15_P07_B06_01DBS 0
Invasion/C021_A17_SY15_P07_B07_01DAS 0
Invasion/C021_A17_SY15_P07_B07_01DBS 0
Invasion/C021_A17_SY15_P07_B08_01DAS 0
Invasion/C021_A17_SY15_P07_B08_01DBS 0
Invasion/C021_A17_SY15_P07_B09_01DAS 0
Invasion/C021_A17_SY15_P07_B09_01DBS 0
Invasion/C021_A17_SY15_P07_B10_01DAS 0
Invasion/C021_A17_SY15_P07_B10_01DBS 0
Theft/C042_A31_SY28_P09_B06_01DBS 1
Theft/C042_A31_SY28_P09_B06_02DAS 1
Theft/C042_A31_SY28_P09_B06_02DBS 1
Theft/C042_A31_SY28_P09_B06_03DAS 1
Theft/C042_A31_SY28_P09_B06_03DBS 1
Theft/C042_A31_SY28_P09_B06_04DAS 1
Theft/C042_A31_SY28_P09_B06_04DBS 1
Theft/C042_A31_SY28_P09_B06_05DAS 1
Theft/C042_A31_SY28_P09_B06_05DBS 1
Theft/C042_A31_SY29_P09_B01_01DAS 1
Theft/C042_A31_SY29_P09_B01_01DBS 1
```

testlist.txt (22개)

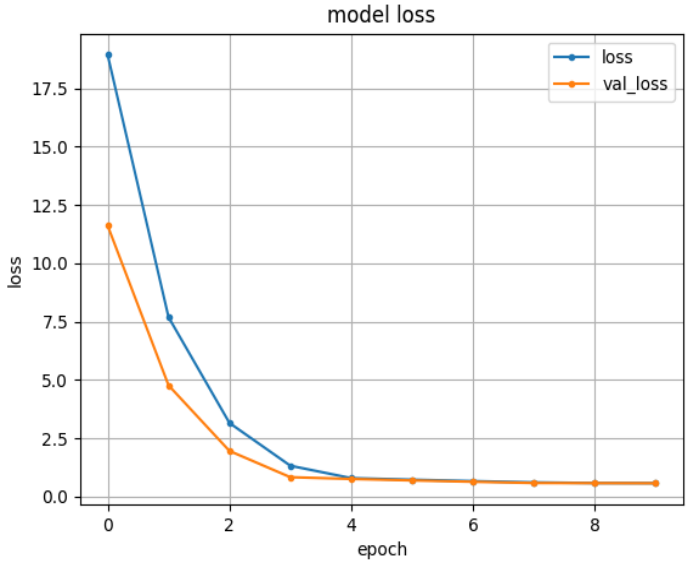
index.txt

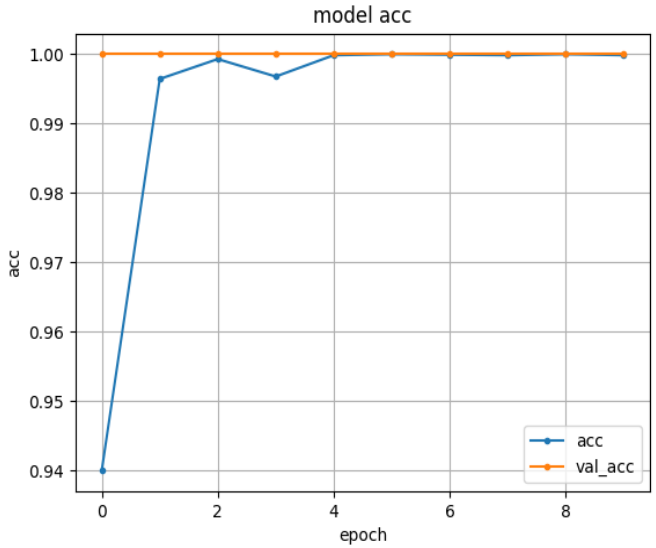
E2ON_Data > input > index.txt

```
0 Invasion
1 Theft
```

Index.txt (2개)

# 2. 모델 학습 (epoch 10)




result.txt

E2ON_Data > result > epoch10 > result.txt

| epoch | loss | acc | val_loss | val_acc |
|---|---|---|---|---|
| 0 | 18.934444983711455 | 0.9400139664804469 | 11.617348756000494 | 1.0 |
| 1 | 7.692006263519799 | 0.9964385474860336 | 4.772076480707545 | 1.0 |
| 2 | 3.161352471799158 | 0.9993016759776536 | 1.9621964222306658 | 1.0 |
| 3 | 1.3276870471139195 | 0.9967877094972067 | 0.8370043369615154 | 1.0 |
| 4 | 0.7973841050483661 | 0.9998603351955307 | 0.7619240230815426 | 1.0 |
| 5 | 0.7304717037930835 | 1.0 | 0.6983359697138428 | 1.0 |
| 6 | 0.6700765567784869 | 0.9999301675977653 | 0.6404969156927364 | 1.0 |
| 7 | 0.61522066040412 | 0.9998603351955307 | 0.5878457818061683 | 1.0 |
| 8 | 0.5860930012591058 | 1.0 | 0.5823951803954543 | 1.0 |
| 9 | 0.581251576626101 | 0.9998603351955307 | 0.5774276304017206 | 1.0 |

# 3. 모델 테스트 (침입)

C021_A17_SY15_P07_B05_01DBS.mp4

- 침입 영상으로 테스트를 진행
- 영상 전체에서 0.9997이상의 높은 정확도를 보여줌

# 3. 모델 테스트 (침입)

<table>
<tr><th colspan="4">Invasion</th></tr>
<tr>
<td>  </td>
<td>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999</td>
<td>  </td>
<td>Invasion prob: 0.9997<br>Invasion prob: 0.9997<br>Invasion prob: 0.9997<br>Invasion prob: 0.9997<br>Invasion prob: 0.9997<br>Invasion prob: 0.9997<br>Invasion prob: 0.9997</td>
</tr>
<tr>
<td>  </td>
<td>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999</td>
<td>  </td>
<td>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999</td>
</tr>
<tr>
<td>  </td>
<td>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999<br>Invasion prob: 0.9999</td>
<td></td>
<td></td>
</tr>
</table>

# 3. 모델 테스트 (절도)

C042_A31_SY28_P09_B06_01DBS.mp4

- 절도 영상으로 테스트를 진행
- 영상 전체에서 1.00의 정확도를 보여줌

# 3. 모델 테스트 (절도)

<table>
<tr><th colspan="4">Theft</th></tr>
<tr>
<td>  </td>
<td>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000</td>
<td>  </td>
<td>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000</td>
</tr>
<tr>
<td>  </td>
<td>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000</td>
<td>  </td>
<td>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000</td>
</tr>
<tr>
<td>  </td>
<td>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000<br>Theft prob: 1.0000</td>
<td>  </td>
<td>Theft prob: 0.9995<br>Theft prob: 0.9994<br>Theft prob: 0.9994<br>Theft prob: 0.9993<br>Theft prob: 0.9993<br>Theft prob: 0.9993<br>Theft prob: 0.9992</td>
</tr>
</table>

# 4.영상의 구간별로 인식

trainfile.txt

E2ON_Data > input > trainfile.txt

```
1  Invasion/C021_A17_SY15_P01_B01_01DAS 0
2  Invasion/C021_A17_SY15_P01_B01_01DBS 0
3  Invasion/C021_A17_SY15_P01_B02_01DAS 0
4  Invasion/C021_A17_SY15_P01_B02_01DBS 0
5  Invasion/C021_A17_SY15_P01_B03_01NAS 0
6  Invasion/C021_A17_SY15_P01_B03_01NBS 0
7  Invasion/C021_A17_SY15_P01_B04_01DAS 0
```

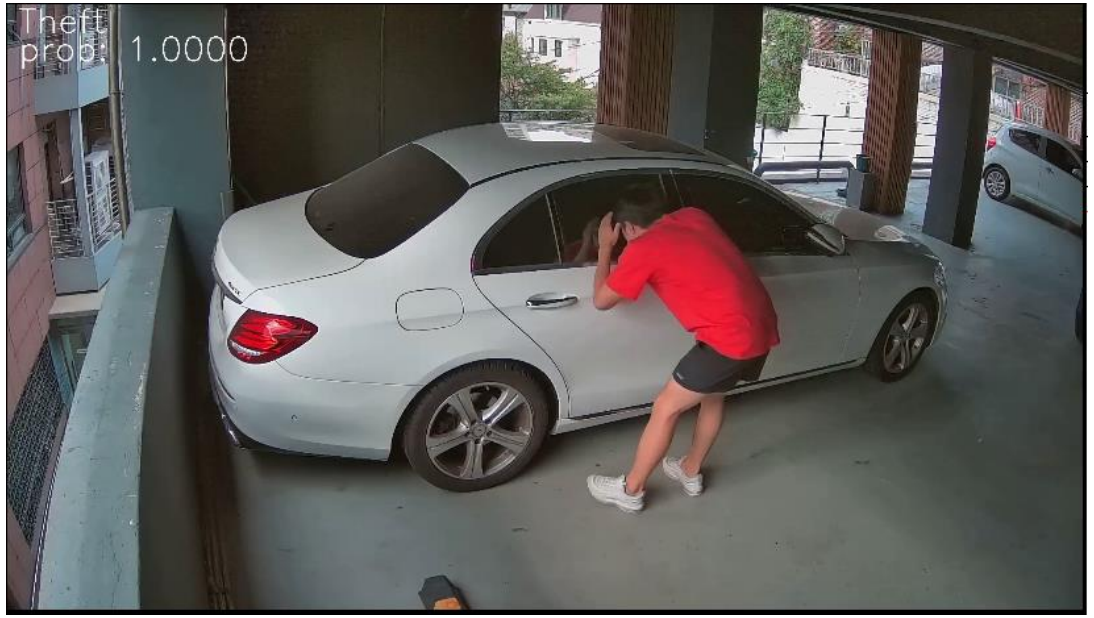
index.txt

E2ON_Data > input > index.txt

```
1  0 Invasion
2  1 Theft
```

- 학습을 진행할 때
Trainlist와 Index에 적힌 것처럼
0, 1로 분야를 구분

- 테스트 시에는 정지된 사진을 분야에 얼마나 적합한지에 대해 판별
- 정상영상을 학습을 해야 정상 분야로 판별이 가능하다고 예상



# 5. 향후 계획

- 새로 제작된 E2ON영상으로 데이터셋 추가
- 추가된 데이터셋으로 학습 진행
- 테스트 결과 확인

# 감사합니다

4팀(김도현, 전은성)