

`total_block_cnt`

- block 당한 fraud 클릭 개수

`total_fraud_score`

-block 당한 fraud 클릭의 확률 총합

- fraud ip: 모델에서 예측한 확률의 평균 < threshold

⇒ score = 1 - 모델에서 예측한 확률의 평균

- uniform

`92198` 개의 시도

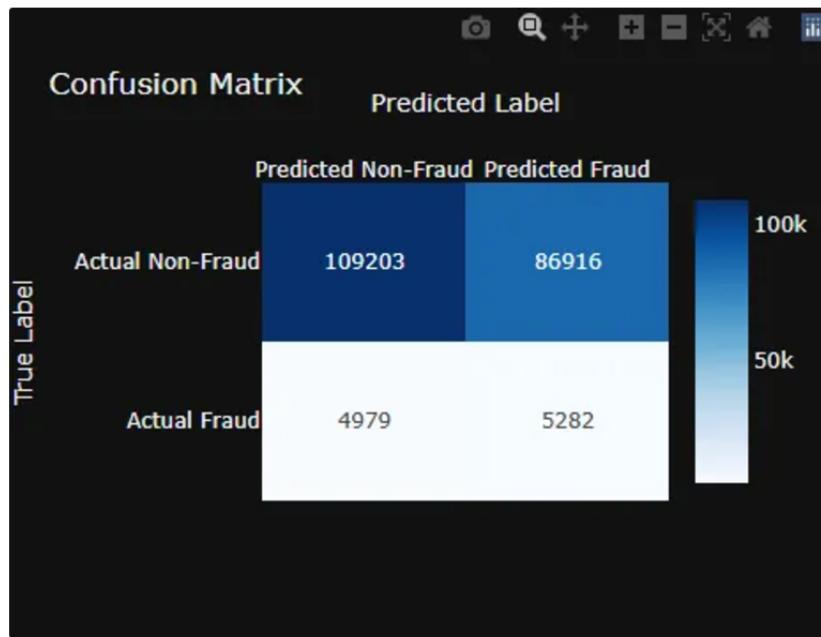
```
0.514764642822337
```

```
total block cnt: 1122368
```

```
total_fraud_score: 1122343.9570054165
```

`total_fraud_score / total block cnt = 0.999978578`

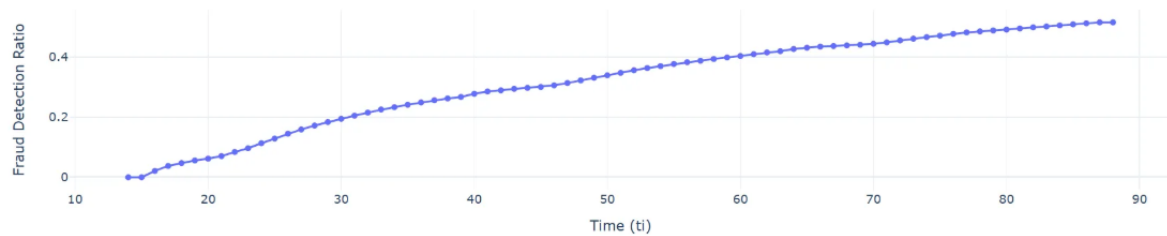
`1 - ans = 0.000021422`



Accuracy	Recall	Precision	F1 Score
0.5547	0.5148	0.0573	0.1027

- recall : 실제 fraud 중, 알고리즘이 fraud로 걸러낸 비율
- Precision: fraud로 예측한 것 중, 실제로 fraud 였던 비율

Fraud Detection Ratio Over Time



main

- min을 0, 5, 10, 15, 20개 각각 돌려보기

0 < "5" > 10 > 15 > 20

- min = 5

95755 개의 시도

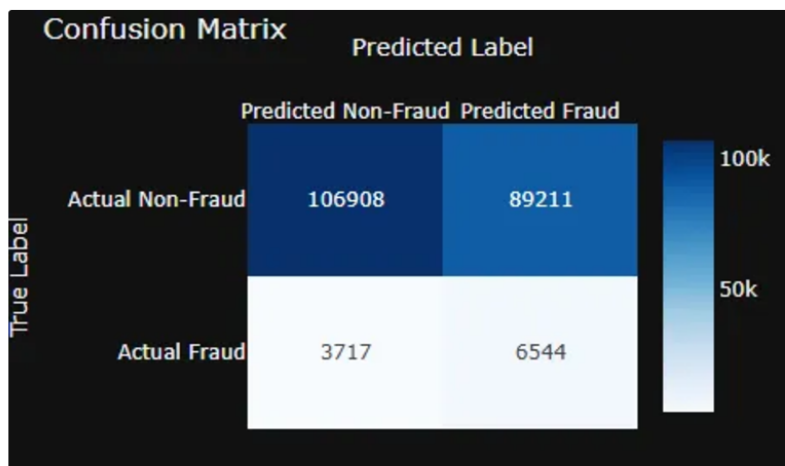
0.6377546048143455

total block cnt: 1312036

total\_fraud\_score: 1312008.0005465911

total\_fraud\_score / total block cnt = 0.999978659

1 - ans = 0.000021341



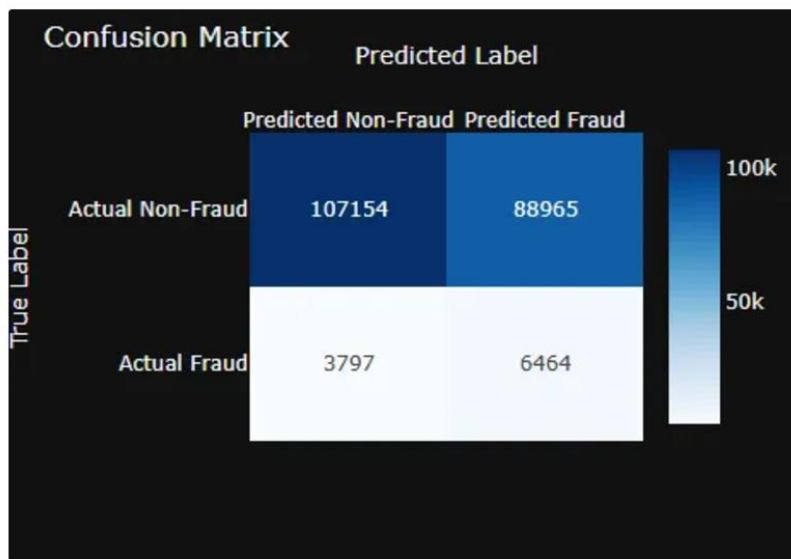
Accuracy	Recall	Precision	F1 Score
0.5497	0.6378	0.0683	0.1235

- min = 10

```
0.6218692135269467
total block cnt: 1310805
total_fraud_score: 1310776.9982170009
```

$\text{total\_fraud\_score} / \text{total block cnt} = 0.999978637$

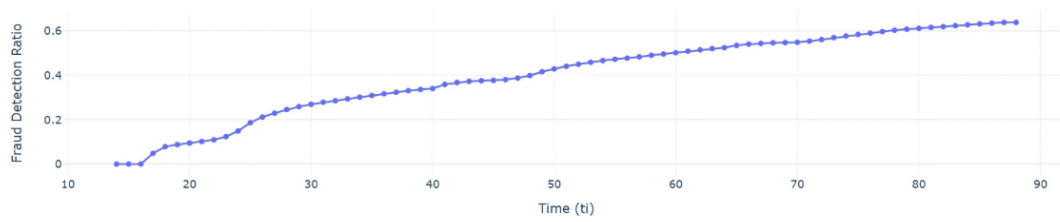
$1 - \text{ans} = 0.000021363$



Accuracy	Recall	Precision	F1 Score
0.5504	0.6300	0.0678	0.1224



Fraud Detection Ratio Over Time



- 비교

	uniform	min=5	min=10
total block cnt(cnt)	1122368	1312036	1310805
total_fraud_score(score)	1122343.9570054165	1312008.0005465911	1310776.9982170009
F1 Score	0.1027	0.1235	0.1224
1-score / cnt	0.000021422	0.000021341	0.000021363

- min = 5의 그룹 별 검사 ip 횟수

```
total: [5757, 378, 1581, 3422, 4483,
        6705, 360, 2281, 362, 21940,
        6540, 361, 360, 21335, 7808,
        2141, 365, 436, 8650, 490]

percentage: [ 6.01221868  0.39475745  1.65108872  3.57370372  4.68173986
              7.00224531  0.37595948  2.38212104  0.37804814  22.91264164
              6.82993055  0.37700381  0.37595948  22.28082084  8.15414339
              2.23591457  0.38118114  0.4553287   9.03347084  0.51172263]
```

- 성능을 개선하기 위한 방법

- prior widening C
- 기른지수 계산에서의 감마 값
- 자잘자잘한 버그?