

Tag Index 계산

$$TagIndex = 1 - \left(\frac{Residual}{Threshold} \right) * (1 - AlarmIndex)$$

예시 1)

- AlarmIndex: 0.7 (경보 발생 기준 지수)
- Threshold: 10
- 실제값: 50 | 예측값: 45 => 잔차: 5

$$TagIndex = 1 - \left(\frac{5}{10} \right) * (1 - 0.7) = 0.85$$

예시 2)

- AlarmIndex: 0.7 (경보 발생 기준 지수)
- Threshold: 10
- 실제값: 50 | 예측값: 35 => 잔차: 15

$$TagIndex = 1 - \left(\frac{15}{10} \right) * (1 - 0.7) = 0.55 \text{ (경보 발생)}$$

Src/model/index/tag/_calculator.py

```
return np.clip(
    1 - (res * (1 - cls.alarm_ref_index) / threshold), a_min=0, a_max=1
)
```

연산순서만 변경되었음

		thres	0.577313
3370-20-AI014	pred	res	index
8.761871338	8.76206398	0.000192642	0.9999
8.746765137	8.7536726	0.006907463	0.996411
8.755004883	8.75686264	0.001857758	0.999035
8.75088501	8.754089355	0.003204346	0.998335
8.745391846	8.752113342	0.006721497	0.996507
8.768736839	8.762147903	0.006588936	0.996576
8.726165771	8.741926193	0.015760422	0.99181
8.749510765	8.750465393	0.000954628	0.999504
			0.99726

이후 window_size(8)기간의 평균을 구함

Model / Group Index 계산

Step1. 신호별 가중 지수 계산

$$WIndex_n = 1 - (1 - Index_n) * Weight_n$$

```
_weighted_index_ary = np.clip(
    1 - (1 - target_index_ary) * target_weights_ary, 0, 1
)
```

Step2. 가중 합산 계산

$$Weighted\ Average = \frac{\sum_{i=1}^N Index_i * weight_i}{\sum_{i=1}^N weight_i}$$

```
_index_weighted_ary = target_index_ary * target_weights_ary
_weighted_avg = _index_weighted_ary.sum() / (target_weights_ary.sum())
```

Step3. 최소 가중 지수 계산

$$Weighted\ Minimum = Minimum(WIndex)$$

①

MAX(0,(1-(1-index))*weights)

weighted_index	index	weights	index_weighted	
0.997	0.997	1.000	0.997	
0.997	0.997	1.000	0.997	
0.953	0.953	1.000	0.953	
0.997	0.997	1.000	0.997	
0.996	0.996	1.000	0.996	
0.980	0.980	1.000	0.980	weighted_avg
0.953		6.000	5.921	0.987
weighted_min				sub_avg
0.953				0.970

③

MIN(weighted_index)/100

SUM(weights)

SUM(index_weights)

SUM(index_weights)/SUM(weights)

②

Model / Group Index 계산

Step4. 평균 그룹 지수 계산

$$\begin{aligned} & \text{Group Index}(AVG) \\ &= \text{Average}(\text{Weighted Average}, \text{Weighted Minimum}) \end{aligned}$$

Step5. 중요신호의 최소 지수 계산

$$\text{중요신호 Minimum} = \text{Minimum}(\text{Index})$$

현재 중요도 Setting 안되었음

weighted_index	index	weights	index_weighted	
0.997	0.997	1.000	0.997	
0.997	0.997	1.000	0.997	
0.953	0.953	1.000	0.953	
0.997	0.997	1.000	0.997	
0.996	0.996	1.000	0.996	
0.980	0.980	1.000	0.980	weighted_avg
0.953		6.000	5.921	0.987
weighted_min				sub_avg
0.953				0.970

AVERAGE(weighted_avg,Weighted_min)

④

Step6. 최종 모델/그룹 지수 계산

$$\begin{aligned} & \text{Group Index} \\ &= \text{Minimum}(\text{중요신호 Minimum}, \text{Group Index (AVG)}) \end{aligned}$$

중요도가 없어서 Group_index가 최종 지수로 출력됨