MCC

1 Definition of MCC

MCC (Matthews Correlation Coefficient) is an evaluation index used to evaluate binary classification models.
The calculation formula of MCC is as follows:

$$MCC = \frac{TP \cdot TN - FP \cdot FN}{\sqrt{(TP + FP)(TP + FN)(TN + FP)(TN + FN)}}$$

Among them,
TP: The number of samples that predict the positive class as the positive class.
FN: The number of samples that predict the positive class as a negative class.
FP: The number of samples that predict the negative class as a positive class.
TN: The number of samples that predict the negative class as a negative class.
The value of MCC ranges from -1 to 1, with values closer to 1 indicating better model performance, values closer to -1 indicating worse model performance, and values close to 0 indicating model performance approaching randomness.

2 Advantages and Disadvantages of MCC

2.1 Advantages of MCC

- It can also provide relatively balanced evaluation results for unbalanced data sets.

2.2 Disadvantages of MCC

- MCC is only suitable for binary classification problems. For multi-category problems, it is necessary to perform category-by-category calculations or use other multi-category evaluation indicators.
- Although the value of MCC can indicate the performance of the model, the specific interpretation is not intuitive.

References

https://scikit-learn.org/stable/modules/generated/sklearn.metrics.matthews_corrcoef.html