

There is no absolute superiority of one statistical (or machine learning) method over another; it always depends on the specific problem they are fitted upon whether one method beats the other or vice versa (Hastie et al., 2017).

Various different measures have been introduced to assess said superiority, e.g. the Mean Squared Error:

$$MSE = \frac{1}{n} \sum_{i=1}^n (y_i - \hat{f}(x_i))^2 \quad (1)$$

, where  $n$  is the sample size,  $y_i$  is the observed  $i$ th target value and  $\hat{f}(x_i)$  is the estimated  $i$ th target value.

Furthermore, there is the Mean Average Error:

Closely related, we have the Mean Average Percentage error:

The less a method's predicted values differ from the observed values, the smaller the error.

## References

Hastie, T., Tibshirani, R., and Friedman, J. H. (2017). *The elements of statistical learning: Data mining, inference, and prediction*. Springer series in statistics. Springer, New York, NY, second edition, corrected at 12th printing 2017 edition.