Is the MAP normally distributed?

* Shapiro-Wilk normality test

data: mean\_average\_precision\_calc

W = 0.92352, p-value = 0.2179

p-value > 0.05, hence, it is likely normally distributed.

* Histogram

A picture containing text, screenshot, rectangle, diagram

Description automatically generated

Conclusion on Histogram: Cannot decide normal distributed or not.

1. Define the Null Hypothesis (H0) and Alternative Hypothesis (Ha):
   * Null Hypothesis (H0): There is no significant difference in the average precision values among the search engine systems.
   * Alternative Hypothesis (Ha): There is a significant difference in the average precision values among the search engine systems.
2. Choose a Statistical Test: As mentioned earlier, you can use statistical tests such as Analysis of Variance (ANOVA) or non-parametric tests like the Kruskal-Wallis test, depending on the assumptions and characteristics of your data.
3. Set the Significance Level (α): The significance level, denoted as α, determines the threshold for rejecting the null hypothesis. Commonly used values are 0.05 (5%) or 0.01 (1%). A significance level of 0.05 means that you are willing to accept a 5% chance of rejecting the null hypothesis when it is true.
4. Perform the Statistical Test: Conduct the chosen statistical test on your data to obtain the test statistic and p-value. The test statistic provides a measure of the observed difference between the groups, while the p-value indicates the probability of obtaining the observed difference (or a more extreme difference) assuming the null hypothesis is true.
5. Interpret the Results: Compare the obtained p-value with the chosen significance level. If the p-value is less than the significance level (p-value < α), you reject the null hypothesis and conclude that there is a statistically significant difference among the search engine systems. If the p-value is greater than or equal to the significance level (p-value ≥ α), you fail to reject the null hypothesis, indicating that there is insufficient evidence to conclude a significant difference.