

Supplementary Material for “Assessing Trustworthiness of AI Training Dataset using Subjective Logic”

This supplementary document provides additional clarifications and visual aids referenced in the main paper, particularly related to the logical properties of Subjective Logic operators and the decision criteria for selecting bias quantification methods.

1. Logical Operator Properties in Subjective Logic

In response to Reviewer #2’s request for clarification, we note the following about the logical operators used in Subjective Logic:

- The conjunction operator ($\omega_{X \wedge Y} = \omega_X \cdot \omega_Y$) is ****non-idempotent**** and assumes independence between X and Y . It reduces belief unless both inputs are strong.
- The disjunction operator ($\omega_{X \vee Y} = \omega_X \sqcup \omega_Y$) increases belief when either operand has high belief, modeling union under uncertainty.
- The negation simply swaps belief and disbelief while retaining the same uncertainty.

These definitions preserve the algebraic closure of opinions within the SL framework. For formal algebraic properties and proofs, refer to Jøsang (2016) [1].

2. Definition Selection Diagram

Figure 1 presents a visual guide for selecting between entry level and dataset as a whole method.

References

- [1] Jøsang, A. (2016). *Subjective Logic: A Formalism for Reasoning under Uncertainty*. Springer.

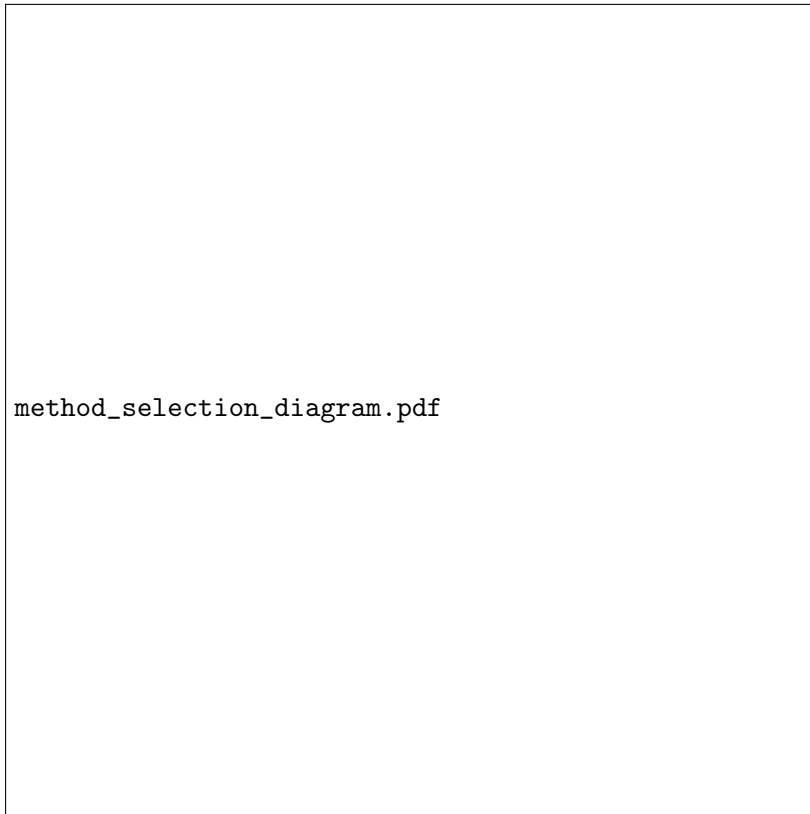


Figure 1: Decision diagram for selecting between the proposed quantification methods.