

Achieved information gain as a sustainability measure

Sustainable data analysis requires trade-offs between computational costs and information gained. While computational costs are easily measurable, information gain is more elusive as not all apparent increases in confidence regarding a quantity of interest are genuine. To quantify the achieved information gain (AIG), a new information measure has been introduced. This quantifies the number of bits gained in a knowledge update that contribute to the desired outcome. The AIG measure can be derived axiomatically within information theory. It is related to, but extends, the well-known relative entropy, also known as the Kullback–Leibler divergence. Its usage will be illustrated for a scenario of sustainable computing involving data from a large research facility.

Sustainability

AI / Sustainable Programming & Footprint

Ethics

Quantifying misinformation

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