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Evaluation Metrics for Explainable AI

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Explainable Artificial Intelligence (XAI) has become one of the key components in ensuring transparency and accountability in AI systems. However, the evaluation of XAI methods remains inconsistent and fragmented. Here, we analyse the categorisations, methodologies, and properties of various evaluation metrics to highlight key differences in evaluation approaches and the lack of consensus across studies. Our findings emphasise challenges such as inconsistent definitions, limited implementation, and the absence of standardised evaluation frameworks. By comparing existing taxonomies and metric classifications, we identify gaps and provide insights to support the development of more robust and comparable XAI evaluation methodologies. Finally, we highlight underexplored application areas beyond classification, such as semantic segmentation, as promising directions for evaluation research.