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Technical

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Artificial intelligence — Data quality for analytics and machine learning (ML) —

Part 6: Visualization framework for data quality

Intelligence artificielle — Qualité des données pour les analyses de données et l'apprentissage automatique —

Partie 6: Cadre de visualisation pour la qualité des données

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Visualization can be used to augment data quality management by displaying a data quality measure generated by the measurement function in a tangible and meaningful manner for assessment by the stakeholder. Visualization can be used in any data quality management process in a data quality management life cycle as part of the development and making of the artificial intelligence (AI) system. For example, it is useful as part of data quality reporting for documenting the data quality management process. It can also stimulate cognitive responses from the stakeholder in exploratory data analysis which can lead to more insights (e.g. detection of missing data, outliers, anomalies, deviations, errors, making comparisons and potential relationships among the observations). On the other hand, visualization also has its pitfalls that stem from cognitive biases such as pareidolia and apophenia.

Visualization can also help in explaining to stakeholders how the application built from the data makes its predictions by providing some transparency to the choice of and input to machine learning (ML) algorithms. This can contribute to the trustworthiness of an AI system by stakeholders who use the AI system and have different expectations.

The background of data quality management is described in Clause 5. A visualization framework for data quality based on data quality management concepts is described in Clause 6. Illustration of the application of the visualization framework with practical use cases is presented in Clause 7. Annex A provides information on AI stakeholders' perspectives and Annex B provides information on database properties.

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