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From Metadata to Models: Graph-Based Representation of Data Reduction Workflows at the European XFEL

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The European XFEL has updated its scientific data policy to require detailed data management plans (DMPs) and mandatory data reduction. We explore how DMPs, together with metadata and empirical traces from data management and storage systems, can be integrated into a scientific knowledge graph (SKG). This heterogeneous information network serves as a foundation for applying Heterogeneous Graph Transformers (HGTs) to learn embeddings and labels for data reduction, conceptualised as graph transformations. Our approach grounds workflow descriptions in observable data, enabling integration with named entity recognition (NER) and LLM-based methods. It offers future potential for predictive data quality assessment, automated DMP evaluation, and recommender systems as services within the European XFEL's data management platform.

I want to give a Lightning Talk

no

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