Semantic Causal and Correlation-Causal Graphs Based on Large Language Model Relationship Evaluation

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Abstract:
Causality and correlation between pairs of attributes are closely related concepts relevant in a number of areas of data science and artificial in telligence. Until recently, the real-world semantic causality of relationships was determined exclusively by human experts. However, recent advances in large language models enable the substitution of this expert reasoning by automated systems in this domain. This development motivated the main objective of the presented study, which can be summarized as the design and implementation of two visualization models for semantic causal analysis based on large language models and correlation analysis, labelled as causal graphs and correlationcausal graphs. Both of the proposed models are evaluated on two datasets with the focus on qualitative, quantitative, and application-oriented aspects of the approaches. The results reached in the study indicate that the proposed methods are suitable for automated causality identification in the context of diagnostic and exploratory data analysis.

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