Causal Representation Learning

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Abstract:

Representation learning aggregates high-dimensional features sets into a small number of macro-variables that maintain the feature set's predictive power for a given target variable. In my presentation, I discuss how to extend predictive- to causal representation learning, i.e., I consider the aggregation of high-dimensional feature sets into macro-variables that stand in a desired causal relation with a given target variable. I categorize the various forms of causal representation learning, discuss how to construct optimization problems with causal constraints, and present applications of causal representation learning in the life sciences.