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Variable Selection for Longitudinal Data Analysis

High-dimensional longitudinal data with large number of covariates, have become increasingly common in many biological applications. The joint likelihood function for longitudinal data is challenging, particularly for correlated discrete outcome data. In such a situation, we propose penalized empirical likelihood based on generalized estimating equations (GEE). The proposed approach only requires specifying the first two marginal moments and a correlation structure. Simulation studies show that when model assumptions are true, its performance is comparable to that of the existing methods and when the model is misspecified, our method has clear advantages over the existing methods.