

Assessing the relationship of evolutionary rates and functional variables by generalized estimating equations for mixture distribution

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Abstract

In the study of complex organisms, clarifying the association between the evolution of coding genes and the measures of functional variables is of fundamental importance. However, traditional analysis of the evolutionary rate is either built on the assumption of independence between responses or fails to handle a mixture distribution problem. In this paper, we utilize the concept of generalized estimating equations to propose an estimating equation to accommodate continuous and binary probability distributions. The proposed estimate can be shown to have consistency and asymptotic normality. Simulations and data analysis are also presented to illustrate the proposed method.

Keywords: evolutionary rate, generalized estimating equation, longitudinal data, mixture distribution