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Learning Item-Attribute Relationship in Q-Matrix Based Diagnostic Classification Models

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Recent surge of interests in cognitive assessment has led to the developments of novel statistical models for diagnostic classification. Central to many such models is the well-known Q-matrix, which specifies the item-attribute relationship. This paper proposes a principled estimation procedure for the Q-matrix and related model parameters. Desirable theoretic properties are established through large sample analysis. The proposed method also provides a platform under which important statistical issues, such as hypothesis testing and model selection, can be addressed.

Submission history

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