Statistical Inference for Diagnostic Classification Models

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Diagnostic classification models (DCM) are an important recent development in psychological/educational testing. Central to many DCMs is the so-called Q-matrix, an incidence matrix specifying the item-attribute relationship. It is the common practice that the Q-matrix is specified by experts when items are written rather than through data-driven calibration. Such a non-empirical approach may lead to mis-specification of the Q-matrix and substantial lack of model fitting, resulting in erroneous interpretation of testing results. This talk is concerned with data-driven construction (estimation) of the Q-matrix and related statistical issues of DCMs.

Keywords: diagnostic classification models, Q-matrix.