# Parameter Estimation in Item Response Models*

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## Abstract

In this paper we present the overwiev, theory and parameter estimation methods for item response models.
Two sets of parameters need to be estimated when fitting an IRT model: The item parameters (difficulty, discrimination, pseudoguessing) and the person`s ability parameters ($\theta$). There are various estimation algorithms available for items (joint maximum likelihood, conditional maximum likelihood, marginal maximum likelihood, and Bayesian MCMC). Given the estimated item parameters, there are then various estimation algorithms for the person parameters (maximum likelihood, MAP, EAP). In this paper we Focus on the maximum likelihood estimation for person scoring in unidimensional IRT models for dichotomous items.

**Keywords**: Item Response Theory, Measurement Theory, Discrimination, Difficulty.

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