

ITS 2012 Tutorial Proposal

Parameter fitting for learner models

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Intelligent tutoring systems are using a growing variety of learner models, increasingly driven by advances in educational datamining. Implementing these models effectively requires understanding the nature of the data, the assumptions inherent to each model and methods available to fit the parameters. We propose a hands-on tutorial to guide participants through fitting learner model parameters from data, using the models to predict learner behavior and assessing the quality of fit. We will prepare data and code in a format which could be distributed to participants and guide them through the fitting of the following models and methods:

- Learning curve fitting
 - Power law fitting
 - Logarithmic fitting
- Bayesian Knowledge Tracing
 - Hidden Markov Models
 - Model fitting
 - Expectation Maximization
 - Brute-force search
 - Nonlinear optimization with explicit cost function
- IRT-based models
 - Rasch Model
 - Additive Factors Model (AFM)
 - Performance Factors Analysis (PFA)
 - Contextual AFM/PFA
 - Search for better models – Learning Factors Analysis