

Real Life Assessments in Learning Spaces

With a reflection on the application of the methodology to an I.Q. test

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A learning space is a particular case of a knowledge space, specified by two sensible axioms. An assessment proceeds by setting an a priori probability distribution on the family of states, which is sequentially modified by Bayesian updating. Real life assessments in empirical learning spaces are rarely straightforward. The main reason is the enormous size of empirical families of knowledge states, which may be on the order of many millions. Maintaining and updating a probability distribution on such a large set of states is not feasible. Even the base of the family may be too large. Pruning the family of states, or modifying the model, both would result in a loss of information and are not advisable. A practical solution of this quandary is to split the domain of the learning space into n classes of items---with n suitably large. We can then perform simultaneous, parallel assessment of the resulting learning spaces on such classes, ultimately combining the n knowledge states obtained into a final one. This talk describes the mathematical theory supporting such a parallel search, the practical implementation, and some of the results.

We also discuss a conceivable application of such a methodology to the set of items of an I.Q. test, and what the likely outcome would tell us about the concept of the I.Q.