Suggested talk at the ICML 04 workshop "Predictive Representations of World Knowledge"

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Title: Online learning algorithms for observable operator models

Abstract: Observable operator models (OOMs) are standardly equipped with an offline learning algorithm. Furthermore, OOMs are standardly purely generative models, although input-output variants have been investigated, too. The mathematical theory behind OOMs is well understood. In contrast, the predictive state representations (PSRs) developed by Sutton et al. are standardly equipped with online learning algorithms, are typically input-output models, and the mathematical theory is only beginning to evolve.

In this situation, it would be interesting to consider online learning algorithms for generative OOMs. Because generative models are simpler than input-output models, and because the mathematical theory of OOMs is relatively well understood, it may be hoped that online learning algorithms for OOMs are easier to analyze than the (mostly empirically validated) algorithms for PSRs. In my presentation, I will present several online learning algorithms for OOMs and report on the analytical insights obtained thus far.