

1157-68-299

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Several notions of complexity of set systems correspond both with model-theoretic dividing lines and notions of machine learning. Set systems of finite VC-dimension, which correspond to NIP formulas, are exactly those which are PAC-learnable, while set systems of finite Littlestone dimension, which correspond to stable formulas, are exactly those which are online-learnable. Recently, a connection between query learning and stable NFCP formulas has been described.

In equivalence query learning, a learner attempts to identify a set by submitting hypotheses and learning from counterexamples to those hypotheses. We consider query learning where counterexamples are chosen randomly. We give bounds in this setting and describe connections with model theory. No background in model theory or machine learning will be required.

This is joint work with James Freitag and Kyle Gannon. (Received February 01, 2020)