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Middletown, OH 45042. *Approaches to Addressing Overfitting in Averaging Classifiers.*

The goal of statistical classification is to learn a model with known data that will accurately predict the class of new cases. Bayesian Model Averaging is theoretically the optimal method for combining learned models, but its application in machine learning remains an open problem due to its tendency to overfit. Overfitting refers to the weight being concentrated on a single or a few models, and results from the exponential form of the weighting function. In this project, we explore a number of alternative weighting schemes in averaging decision trees that aim to address this problem. Our studies show that a movement towards more uniform model weighting yields better results as compared to the previously-mentioned weighting scheme, but that there is still room for improvement in terms of a more accurate model-space approximation. (Received September 04, 2014)