# How Probability calibration works part2(Machine Learning)

Monodeep Mukherjee · Following

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1. Probability Calibration Trees(arXiv)

Author : Tim Leathart, Eibe Frank, Geoffrey Holmes, Bernhard Pfahringer

Abstract : Obtaining accurate and well calibrated probability estimates from classifiers is useful in many applications, for example, when minimising the expected cost of classifications. Existing methods of calibrating probability estimates are applied globally, ignoring the potential for improvements by applying a more fine-grained model. We propose probability calibration trees, a modification of logistic model trees that identifies regions of the input space in which different probability calibration models are learned to improve performance. We compare probability calibration trees to two widely used calibration methods — -isotonic regression and Platt scaling — - and show that our method results in lower root mean squared error on average than both methods, for estimates produced by a variety of base learners

2. Spline-Based Probability Calibration(arXiv)

Author : Brian Lucena

Abstract : n many classification problems it is desirable to output well-calibrated probabilities on the different classes. We propose a robust, non-parametric method of calibrating probabilities called SplineCalib that utilizes smoothing splines to determine a calibration function. We demonstrate how applying certain transformations as part of the calibration process can improve performance on problems in deep learning and other domains where the scores tend to be “overconfident”. We adapt the approach to multi-class problems and find that better calibration can improve accuracy as well as log-loss by better resolving uncertain cases. Finally, we present a cross-validated approach to calibration which conserves data. Significant improvements to log-loss and accuracy are shown on several different problems. We also introduce the ml-insights python package which contains an implementation of the SplineCalib algorithm

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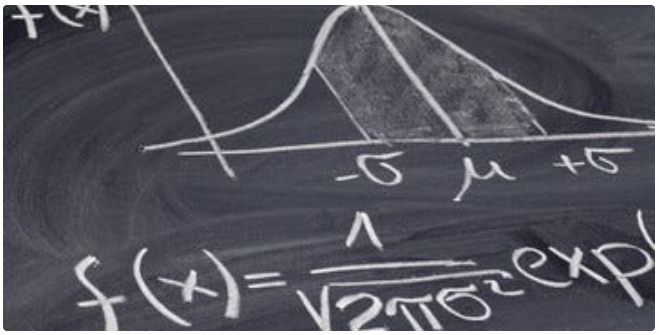


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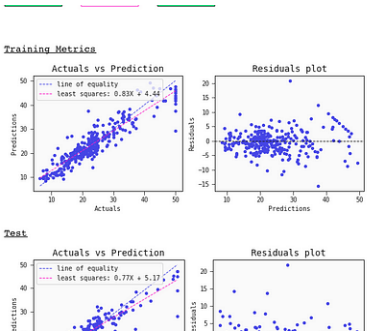


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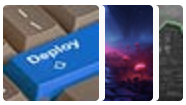


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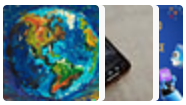

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