



International Verification Methods Workshop

June 4 – 10, 2009

To be held at FMI, Helsinki, Finland

Tutorial Session: June 4-6 Scientific Workshop: June 8-10



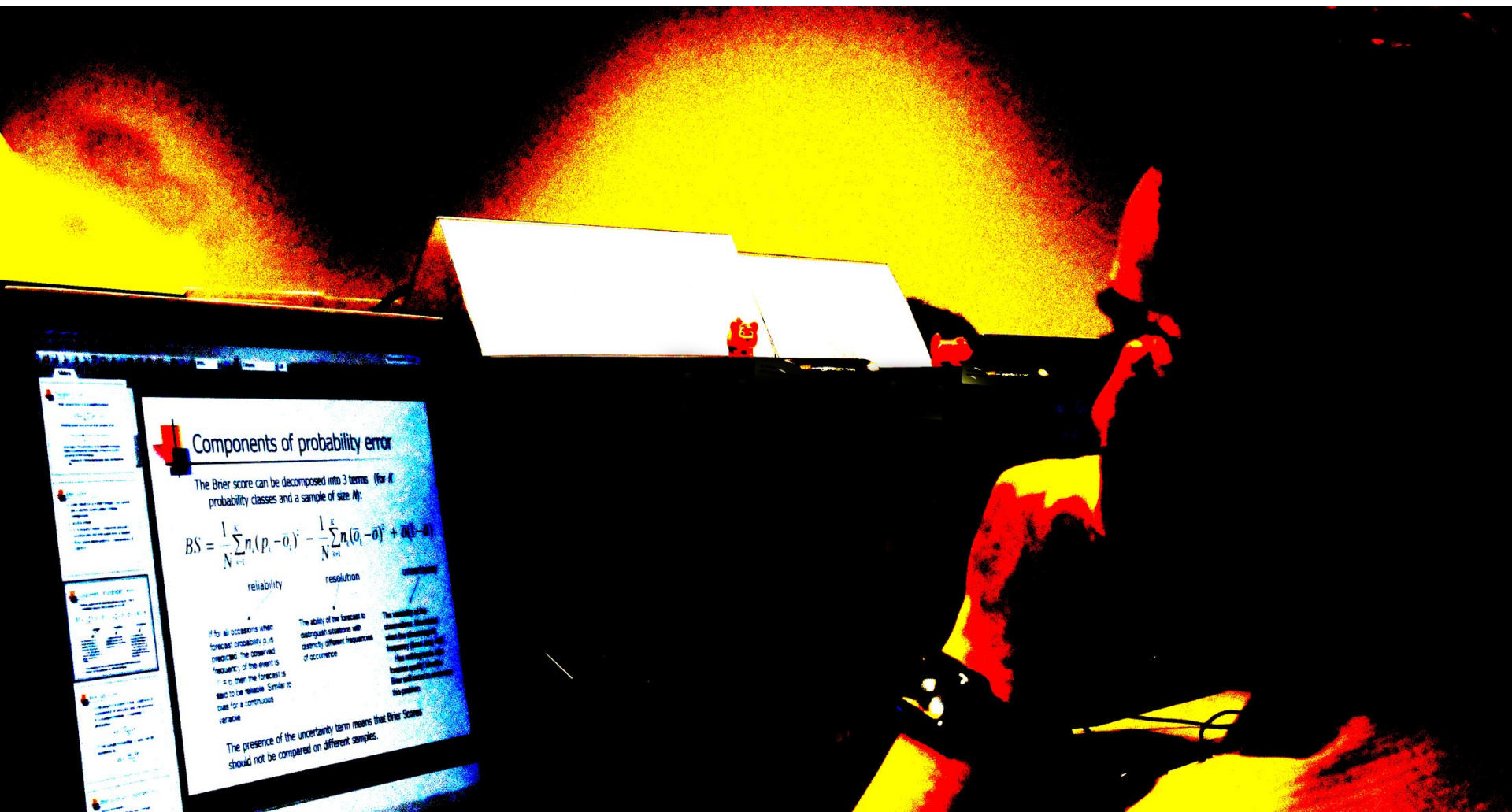


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Components of probability error

The Brier score can be decomposed into 3 terms (for k probability classes and a sample of size N):

$$BS = \underbrace{\frac{1}{N} \sum_{i=1}^k n_i (p_i - \bar{p}_i)^2}_{\text{reliability}} - \underbrace{\frac{1}{N} \sum_{i=1}^k n_i (\bar{p}_i - \bar{p})^2}_{\text{resolution}} + \underbrace{\bar{p}(1-\bar{p})}_{\text{uncertainty}}$$

If for all occasions when forecast probability is p_i observing the observed frequency of the event is p_i , then the forecast is said to be reliable. Similar to bias for a continuous variable.

The ability of the forecaster to distinguish situations with distinctly different frequencies of occurrence.

The reliability and resolution terms are dependent on the forecast quality. Better forecast quality leads to lower bias and better resolution.

The presence of the uncertainty term means that Brier Scores should not be compared on different samples.