

Current context modelling methods use an aggregated form of the statistics reusing the data history only rarely. This work proposes two independent methods that use the history in a more elaborate way.

When the Prediction by Partial Matching (PPM) method updates its context tree, previous occurrences of a newly added context are ignored, which harms precision of the probabilities. An improved algorithm, which uses the complete data history, is described. The empirical results suggest that this PPM sub-optimality is one of the major cause of the problem of inaccurate probabilities in high context orders.

Current methods (especially PAQ) adapt to non-stationary data by strong favoring of the most recent statistics. The method proposed in this work generalizes this approach by favoring those parts of the history which are the most relevant to the current data, and its implementation provides an improvement for almost all tested data especially for some samples of non-stationary data.