



The minimum description length principle for probability density estimation by regular histograms

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Auteur	Chapeau-Blondeau, François [1], Rousseau, David [2]
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Mots-clés	Data [3], Minimum [4], Probability [5], Random [6], Statistical [7]
Résumé en anglais	<p>The minimum description length principle is a general methodology for statistical modeling and inference that selects the best explanation for observed data as the one allowing the shortest description of them. Application of this principle to the important task of probability density estimation by histograms was previously proposed. We review this approach and provide additional illustrative examples and an application to real-world data, with a presentation emphasizing intuition and concrete arguments. We also consider alternative ways of measuring the description lengths, that can be found to be more suited in this context. We explicitly exhibit, analyze and compare, the complete forms of the description lengths with formulas involving the information entropy and redundancy of the data, and not given elsewhere. Histogram estimation as performed here naturally extends to multidimensional data, and offers for them flexible and optimal subquantization schemes. The framework can be very useful for modeling and reduction of complexity of observed data, based on a general principle from statistical information theory, and placed within a unifying informational perspective.</p>
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Liens

[1] <http://okina.univ-angers.fr/f.chapeau/publications>

- [2] [http://okina.univ-angers.fr/publications?f\[author\]=1901](http://okina.univ-angers.fr/publications?f[author]=1901)
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