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On the kernel rule for function classification

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Abstract Let X be a random variable taking values in a function space \mathcal{F} , and let Y be a discrete random label with values 0 and 1. We investigate asymptotic properties of the moving window classification rule based on independent copies of the pair (X, Y) . Contrary to the finite dimensional case, it is shown that the moving window classifier is not universally consistent in the sense that its probability of error may not converge to the Bayes risk for some distributions of (X, Y) . Sufficient conditions both on the space \mathcal{F} and the distribution of X are then given to ensure consistency.

Keywords Classification · Consistency · Kernel rule · Metric entropy · Universal consistency