

The information contained in uniform distributions



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- Explain the meaning of the term functional
 - State Khitchine's four axioms for the information
 - Explain what we mean when we state that a function or functional is monotonically decreasing.
 - Now explain why the information in a uniform distribution decreases monotonically with the size of the sample space.

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- If the uniform probability distribution p has a sample space with m outcomes and the probability distribution q has a sample space with n outcomes. How many outcomes are there in the sample space for the joint probability distribution $p \otimes q$. N.B. p and q are independent.
- Explain why the information in a uniform probability distribution must be a function of $\frac{1}{n}$ where n is the number of
- Hence, explain why the information in a uniform distribution, p , is given by: $I(p) = -k \ln n$.