



Empirical Measure

1 Why

There is a natural probability measure on a measurable space to associate with a dataset from the base set of that space.

2 Definition

The *empirical measure* for a dataset in some measurable space is the measure which associates to each event the proportion of the records which are elements of that event.

2.1 Notation

Let (a^1, \dots, a^n) be a dataset in a measurable space (A, \mathcal{A}) . Let $P : A^* \rightarrow [0, 1]$ be the probability measure that assigns to each set $B \subset A$ the number

$$P(B) = \frac{1}{n} |\{k \in \{1, \dots, n\} \mid a^k \in B\}|.$$

Then P is the empirical measure.