



Why

Definition

Let I be a (indexing) set and let $(\Omega, \mathcal{A}, \mathbf{P})$ be a probability space. A *normal process* (more commonly, *gaussian process*) x on I is a family of real-valued random variables with the property that there exists a $m : I \rightarrow \mathbf{R}$ and positive definite $k : I \times I \rightarrow \mathbf{R}$ with the property that if $J \subset I$, $|J| = d$, then $x_J \sim \mathcal{N}(m(J), k(J \times J))$. In other words, for each $i \in I$, $x_i : \Omega \rightarrow \mathbf{R}$ is a random variable And $x_J : \Omega \rightarrow \mathbf{R}^d$ is a Gaussian random variable. We call m is the *mean function* and k is the *covariance function*

