

MULTIVARIATE NORMAL ENTROPY

Why

Result

Proposition 1. Let $x: \Omega \to \mathbb{R}^d$ be a normally distributed random variable on a probability space $(\Omega, \mathcal{A}, \mathbb{P})$ with mean $\mu \in \mathbb{R}^d$ and covariance $\Sigma \succ 0$. Let $g: \mathbb{R}^d \to \mathbb{R}$ be the density of x. Then the entropy of x is

$$h(g) = -\int g \log g = \frac{1}{2} \log((2\pi e)^d \det \Sigma)$$

This result tells us the $multivariate\ normal\ entropy$ or $Gaussian\ entropy.$

