Why

What is the differential mutual information between two components of a multivariate normal.

Result

PROPOSITION 1. *Let $g \sim \mathcal{N}(\mu, \Sigma)$ Then the differential entropy of g is*

$$\frac{1}{2} \ln \left((2\pi e)^d \, \mathbf{det} \, \Sigma \right)$$

Normal Differential Entropy

Multivariate Normals

Multivariate Real Densities — Positive Definite Matrices — Matrix Determinants — Normal Densities

Matrix Inverses — Probability Densities — Quadratic Forms — Real Matrices

Inverse Elements — Real Integrals — Matrix-Matrix Products — Matrix Transpose — Symmetric Matrices — Identity Matrices

Nonnegative Integrals — Matrices — Real Vectors

Simple Integrals — Vectors — Exponential

Element Functions — Measurable Functions — N-Dimensional Space

Measures — Simple Functions — Space

Partitions — Extended Real Numbers — Characteristic Functions

Real Limits — Probability Distributions — Real Functions

Probability Outcomes — Real Sequences — Real Summation — Intervals — Real Square Roots

Subset Algebras — Sequences — Natural Summation — Fields — Real Numbers

Probability — Common Sense — Natural Square Roots

Set Operations — Cardinality — Family Operations — Direct Products — Groups — Rational Numbers

Injective Functions — Algebras — Natural Families — Natural Order — Natural Sums — Integer Numbers — Square Numbers

Function Composites — Operations — Subset Systems — Natural Products — Zero — Squares

Set Symmetric Differences — Functions — Power Set — Families — Natural Numbers — Equation Solutions

Set Unions — Relations — Set Intersections

Set Complements — Ordered Pairs — Equations

Unordered Pairs — Empty Set

Set Specification

Set Inclusion

Sentences — Set Equality

Sets — Identity

Objects