



Tree Normals

1 Why

We name multivariate normal densities which factor according to a tree. These densities require tabulating fewer numbers.

2 Definition

A *tree multivariate normal* or *tree normal* density is a multivariate normal density which factors according to a tree.

2.1 Fewer numbers

A multivariate normal on \mathbf{R}^n requires tabulating n numbers for the mean and $n(n+1)/2$ numbers for the covariance matrix. If it factors according to a tree, we need only n numbers to specify the covariance (one for the one-variable marginal, and $n-1$ for the covariance of the two-variable conditionals).

Normal Densities

Positive

Quadratic Forms

Sym

