

Sommaire.

1 Latin Hypercube Sampling

Latin hypercube Sampling

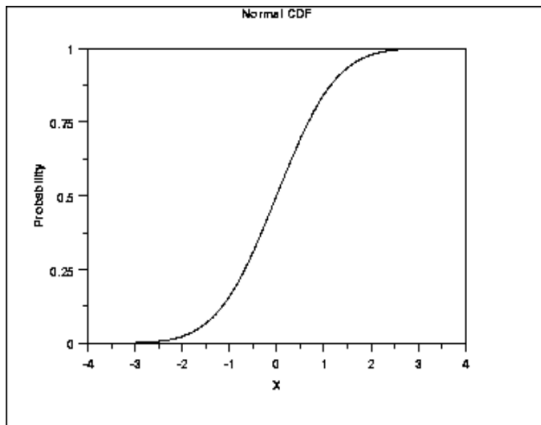
Purpose :

Recreate an input distribution through less samples

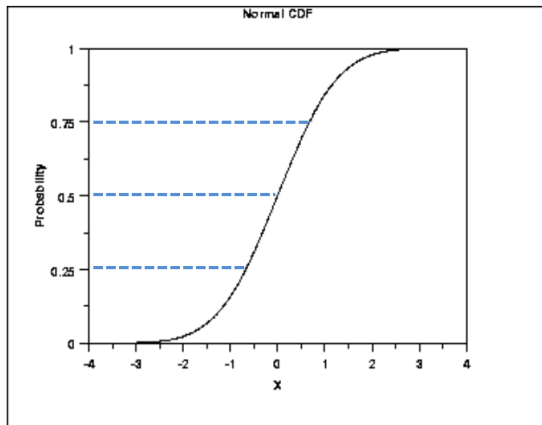
Method

- The key is a stratification of the input probability distribution
- Stratification divides the cumulative function into equal intervals
- A sample is then randomly taken from each interval or "stratification"

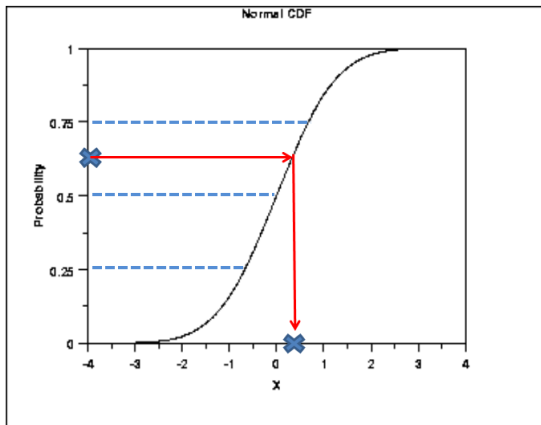
1D Sampling



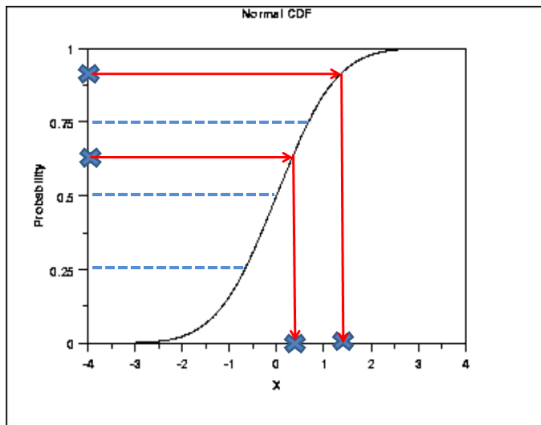
1D Sampling



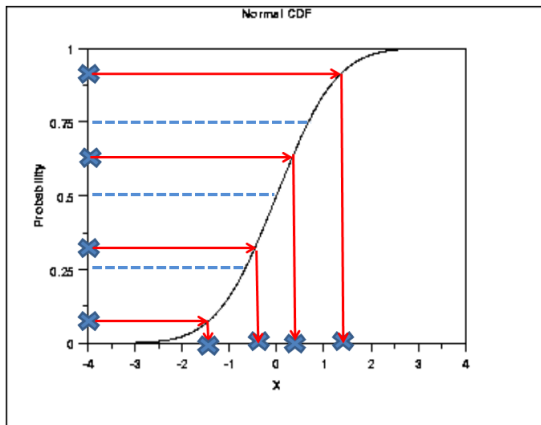
1D Sampling



1D Sampling

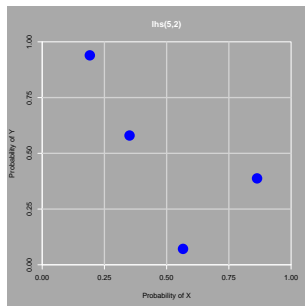


1D Sampling



2D Latin hypercube Sampling

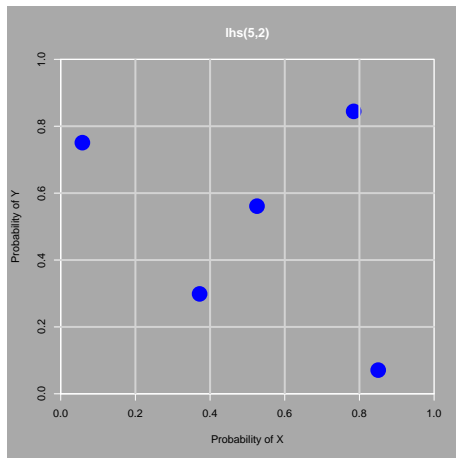
In the context of Statistical Sampling, a square grid containing sample positions is a Latin Square if and only if there is only one sample in each row and each column



A Latin Hypercube is the generalisation of this concept to an arbitrary number of dimensions whereby each sample is the only one in each axis-aligned hyperplane containing it.

2D Sampling

Two dimensional Latin hypercube sampling : x and y must be independent



- Generate one-dimensional LHS samples for x
- Generate one-dimensional LHS samples for y
- Randomly combine the LHS samples to two-dimensional pairs
- One sample in each row and each column
- Sampling is random in each grid
- Higher-dimensional LHS samples can be similarly generated

Latin Hypercube Sampling

