

GAUSSINT

GAUSSINT returns a Gaussian (probability based) interpolated value

Syntax

1. GAUSSINT(Pno%, Ndim%, "ColLab\$_1",..., "ColLab\$_NA%", Xint_1,...,Xint_n, Smfac)
2. GAUSSINT(@ObjFn(.), Ndim%, @ObjColPar_1,..., @ObjColPar_NA%, Xint_1,...,Xint_n, Smfac)
3. GAUSSINT(Telitab\$, Ndim%, "ColLab\$_1",..., "ColLab\$_NA%", Xint_1,...,Xint_n, Smfac)

Arguments

- Pno% can be an integer value or a parameter which is given an integer value.
- @ObjFn() refers to the Object from which data will be used
- TeLiTab\$ refers to the string parameter that contains the TeLiTab
- Ndim% is the number of dimensions (or columns in a table...).
- "ColLab\$_1" and @ObjColPar_1 refer to the column that will be used as the first parameter.
- "ColLab\$_2" and @ObjColPar_2 refer to the column that will be used as the second parameter. etc.
- Smfac is the so-called smoothing factor which determines the 'softness' of the transitions between the cases in the database on which is interpolated.

Remarks

1. See also Telitab access for a generic description on the use of TeLiTab data
2. Similar to other Data analysis functions, the GAUSSINT is a convenient way to evaluate data. Please also look at these functions for syntax examples
3. The interpolation is based on weighing the cases in the database 'surrounding' the case (or pattern) given through the GAUSSINT argument list. The closer the database case is to the pattern, i.e. the smaller the Euclidian distance, the larger its contribution to the interpolated value. The interpolation is Gaussian since a Gaussian probability distribution is applied. For this purpose, the database is scaled per column between 0 and 1, on the basis of the minimum and maximum column value (only if minimum<maximum). The GAUSSINT function makes it possible to interpolate in data sets in which the number of independent parameters is larger than the number of dimensions in the data.
4. Concerning the smoothing factor, the method implemented in this function is the most basic form of Gaussian interpolation: each column parameter uses the same smoothing factor Smfac which means that each diverging parameter is given the same weight, i.e. effect on the overall result of the interpolation. Typical values of Smfac are between 0.1 and 0.8, the interpolation is smoother for the larger values of Smfac. In order to obtain acceptable results for a particular database, it is necessary to experiment with the smoothing factor.

Examples

A TeLiTab dataset is placed in the dataset of the relation using GAUSSINT:

```
|GAUSSINT1|
0
3 "XC" "YC" "ZC"
"1" 1 1 4
"2" 2 4 5
"3" 3 9 6
"4" 4 16 7
"5" 5 25 8
"6" 6 36 9
"7" 7 49 8
"8" 8 64 7
"9" 9 81 6
"10" 10 100 5|
```

The relation will be:

```
y = GAUSSINT(1, 3, "XC", "YC", "ZC", a, b, beta)
```

for a=3, b=4, beta=0.5, returns

```
y=6.45
```

Quick links: [Functions overview](#) | [Attribute overview](#) | [Constants overview](#) | [Dimensions overview](#)