

>> help xcorr

XCORR Cross-correlation function estimates.

$C = \text{XCORR}(A,B)$, where A and B are length M vectors ($M > 1$), returns the length $2*M-1$ cross-correlation sequence C . If A and B are of different length, the shortest one is zero-padded. C will be a row vector if A is a row vector, and a column vector if A is a column vector.

XCORR produces an estimate of the correlation between two random (jointly stationary) sequences:

$$C(m) = E[A(n+m)*\text{conj}(B(n))] = E[A(n)*\text{conj}(B(n-m))]$$

It is also the deterministic correlation between two deterministic signals.

$\text{XCORR}(A)$, when A is a vector, is the auto-correlation sequence.

$\text{XCORR}(A)$, when A is an M -by- N matrix, is a large matrix with $2*M-1$ rows whose N^2 columns contain the cross-correlation sequences for all combinations of the columns of A .

The zeroth lag of the output correlation is in the middle of the sequence, at element or row M .

$\text{XCORR}(\dots, \text{MAXLAG})$ computes the (auto/cross) correlation over the range of lags: $-\text{MAXLAG}$ to MAXLAG , i.e., $2*\text{MAXLAG}+1$ lags. If missing, default is $\text{MAXLAG} = M-1$.

$[C, \text{LAGS}] = \text{XCORR}(\dots)$ returns a vector of lag indices (LAGS).

$\text{XCORR}(\dots, \text{SCALEOPT})$, normalizes the correlation according to SCALEOPT :

'biased' - scales the raw cross-correlation by $1/M$.

'unbiased' - scales the raw correlation by $1/(M-\text{abs}(\text{lags}))$.

'coeff' - normalizes the sequence so that the auto-correlations at zero lag are identically 1.0.

'none' - no scaling (this is the default).

See also `xcov`, `corrcoef`, `conv`, `cconv`, `cov` and `xcorr2`.

Reference page in Help browser

`doc xcorr`

>> help max

MAX Largest component.

For vectors, MAX(X) is the largest element in X. For matrices, MAX(X) is a row vector containing the maximum element from each column. For N-D arrays, MAX(X) operates along the first non-singleton dimension.

[Y,I] = MAX(X) returns the indices of the maximum values in vector I. If the values along the first non-singleton dimension contain more than one maximal element, the index of the first one is returned.

MAX(X,Y) returns an array the same size as X and Y with the largest elements taken from X or Y. Either one can be a scalar.

[Y,I] = MAX(X,[],DIM) operates along the dimension DIM.

When X is complex, the maximum is computed using the magnitude MAX(ABS(X)). In the case of equal magnitude elements, then the phase angle MAX(ANGLE(X)) is used.

NaN's are ignored when computing the maximum. When all elements in X are NaN's, then the first one is returned as the maximum.

Example: If X = $\begin{bmatrix} 2 & 8 & 4 \\ 7 & 3 & 9 \end{bmatrix}$ then max(X,[],1) is [7 8 9],

max(X,[],2) is [8 9], and max(X,5) is [5 8 5 7 5 9].

See also min, median, mean, sort.

Overloaded methods:

timeseries/max

quantizer/max

fints/max

ordinal/max

Reference page in Help browser

doc max