



Generating

linspace(start, end, n)

Generate vector with linearly spaced elements

eye(n_rows, n_cols)

Generate identity matrix

one(n_rows, n_cols)

Generate object filled with ones

zeros(n_rows, n_cols)

Generate object filled with zeros

randu / randn(n_rows, n_cols)

Generate object with random values
(uniform and normal distributions)

n_rows

number of rows

n_cols

number of columns

Functions

abs(x)

Obtain magnitude of each element

all(x)

Check whether all elements are non-zero,
or satisfy a relational condition

X

Matrix

any(x)

Check whether any element is non-zero,
or satisfies a relational condition

conv_to<type>(x)

Convert between matrix types

cross(A,B)

Cross product

A,B

Matrixes

Functions

det(x)

Determinant

diagmat(x)

Diagonal matrix from given matrix or
vector

index_min / index_max(x)

Indices of extremum values

min / max(x)

Return extremum values

norm(X,p)

Various norms of vectors and matrices

p

Intiger >= 1 or '-inf', 'inf', 'fro'

reshape(X, n_row, n_col)

Change size while keeping elements

sum(x)

Return sum

trace(x)

Sum of diagonal elements



Decompositions, Factorisations, Inverses and Equation Solvers

chol(x)

Cholesky decomposition

X

Matrix

inv(x)

Inverse of general square matrix

pinv(x)

Pseudo-inverse

lu(x)

Lower-upper decomposition

solve(A,B)

Solve systems of linear equations

A,B

$A \cdot X = B$

Statistics & Clustering

cov(x,y)

Covariance

cor(x,y)

Correlation

hist(X, centers)

Histogram of counts

centers

Vector of increasing values

kmeans(x)

Cluster data into disjoint sets

princomp(x)

Principal component analysis (PCA)

X

Matrix

Functions

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Diagonal matrix from given matrix or vector

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Indices of extremum values

min / max(x)

Return extremum values

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Various norms of vectors and matrices

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Integer ≥ 1 or '-inf', 'inf', 'fro'

reshape(X, n_row, n_col)

Change size while keeping elements

sum(x)

Return sum

trace(x)

Sum of diagonal elements