frobeniusNorm

Computes the Frobenius Norm of a matrix A.

Syntax

```
nv = frobeniusNorm(A, approx)
```

Description

frobeniusNorm(A, approx) computes Frobenius Norm of M x N matrix. If approx is true the Norm is approximated with mean2 function.

Examples

```
A = magic(8);
nv = frobeniusNorm(A, approx)
```

Input Argurments

A is a M x N matrix of real values.

apporx is boolean flag. If true the norm is approximated. Default is false.

Output Argurments

nv is a scalar norm value.

Requirements

- Other m-files required: None
- Subfunctions: mean2, sqrt, sum
- MAT-files required: None

See Also

- QFCAPX
- meanPolyQFC


```
function nv = frobeniusNorm(A, approx)
    arguments
        % validate A as real matrix
        A (:,:) double {mustBeReal}
        % validate approx as flag with default false
        approx (1,1) logical {mustBeNumericOrLogical} = false
    end

    % norm matrix
    if approx
        % approximate frobenis with mean and multiply with radicant of RMS
        % frobenius norm is a RMS * sqrt(N x N), RMS >= mean
        nv = mean2(A) * sqrt(numel(A));
    else
        % norm with frobenius
        nv = sqrt(sum(A.^2, 'all'));
    end
```

```
end
```

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