The Matlab Utilities gretl function package

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July 11, 2019

This is a collection of Matlab compatibility functions intended to make it easier to translate Matlab/Octave programs to hansl scripts. The package currently contains the following:

1. diagrv(x, v): replaces the main diagonal of a square matrix x with the vector v

2. find(x, N, direction): Finds non-zero elements of input matrix x. The function returns a bundle with the following fields: idx = indices of non-zero elements (based on column-wise vectorization) i = row indices j = column indices v = values

   If the optional second argument N>0, the function searches only the first (default) or last N elements of vec(x). To search from the end, include the string “last” (with quotes) as the third input argument.

   Use of the bundle return value gets around the fact that gretl functions don’t allow multiple return arguments.

3. length(x): Returns the size of the maximum dimension of x

4. repmat(x, r, c): Produces an $r \times c$ tiling of the input matrix xx. If $xx = \begin{bmatrix} 1 & 2 \end{bmatrix}$, then repmat(xx, 1, 2) produces $\begin{bmatrix} 1 & 2 & 1 & 2 \end{bmatrix}$

   and repmat(xx, 2, 1) produces $\begin{bmatrix} 1 & 2 \\
   1 & 2 \end{bmatrix}$

   Written by Riccardo (Jack) Lucchetti

5. size(x): Returns a row vector with the number of rows & columns of the input matrix xx. An optional second argument j returns just the number of rows (j=1) or columns (j=2)

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6. **eye(r,c)**: If \( r = c \), or \( c = 0 \) (the default), return the identity matrix of order \( r \). For \( r < c \), return \( I(r) \begin{pmatrix} \end{pmatrix} \text{zeros}(r, c-r) \); if \( r > c \), return \( I(r) \begin{pmatrix} \end{pmatrix} \text{zeros}(r-c,r) \).

For example, `eye(3,2)` produces
\[
\begin{bmatrix}
1 & 0 \\
0 & 1 \\
0 & 0
\end{bmatrix},
\]
while `eye(2,3)` gives
\[
\begin{bmatrix}
1 & 0 & 0 \\
0 & 1 & 0
\end{bmatrix}.
\]

The native gretl function \( I() \) was extended to produce this behavior in version 2019d; if the user’s version is this current or newer, `eye()` just serves as a wrapper for `I()`. In earlier versions the required matrix is built explicitly. Added in version 0.3.

New functions may be added in the future. Please email if you have a specific request.