Matrices in $n$ dimensions

\[
x = \begin{bmatrix}
1 & 2 & 3 \\
4 & 5 & 6
\end{bmatrix}
\]

\[
y(:,:,1) = \begin{bmatrix}
1 & 2 \\
3 & 4
\end{bmatrix}
\]

\[
y(:,:,2) = \begin{bmatrix}
5 & 6 \\
7 & 8
\end{bmatrix}
\]

\[
y(:,:,3) = \begin{bmatrix}
9 & 10 \\
11 & 12
\end{bmatrix}
\]

size(y) -> [2 2 3]

Typical brain data: location of neuron (x,y,z) + time

Heat-maps

imagesc(Data) – view 2D matrix of scaled data as image
- Red is highest value, blue is lowest value

Visualize a 2D slice of brain data (size(brainData) -> 128x128x88)

\[\text{slice}=\text{squeeze} (\text{brainData}(::,::,20))\] -> slice 20 of brain
imagesc(slice)

Scaling vs. not-scaling

imagesc(Data) – view 2D matrix of scaled data as image
- Red (or yellow) is highest value, blue is lowest value

image(Data) – view 2D matrix of data as image
- Red (or yellow) is 64 or higher, blue is 0 or lower

\[\text{slice}=\text{squeeze} (\text{brainData}(::,::,10))\]
figure; imagesc(slice);
vs
figure; image(slice)
Multiple plots

- figure -> opens new plotting window
- subplot(r,c,i) -> creates grid of plots with
  - r rows
  - c columns
  - fill in position i

```matlab
A = squeeze(brainData(:,:,10));
subplot(1,3,1); imagesc(A);
B = squeeze(brainData(:,:,20));
subplot(1,3,2); imagesc(B);
C = squeeze(brainData(:,:,30));
subplot(1,3,3); imagesc(C);
```