

# humpy dimensions

1D array  $\rightarrow [0, 4, 9, 4, 17]$

2D array  $\rightarrow [[4, 1, 4], [6, 3, 1]]$

First element in size/shape is new compared to previous dimension

2D arrays are written like

$\rightarrow$  (new)  $\left[ \begin{array}{c} [4, 1, 4] \\ [6, 3, 1] \end{array} \right]$

size (2, 3)  
↑  
new

3D arrays are written like

$\rightarrow$  (new)  $\left[ \begin{array}{c} \left[ \begin{array}{c} [6, 1, 2] \\ [1, 2, 3] \end{array} \right] \\ \left[ \begin{array}{c} [2, 3, 4] \\ [5, 6, 7] \end{array} \right] \end{array} \right]$

3 (remains)

2 (remains)

3 (remains)

size (2, 3, 3)  
↑  
new

4D arrays are written like

$\rightarrow$   $\left[ \left[ \left[ \left[ 3, 4, 1 \right] \right] \right] \right]$   
 $\left[ \begin{array}{c} [4, 4, 8] \\ \left[ \begin{array}{c} [4, 0, 6] \\ [1, 2, 3] \end{array} \right] \\ \left[ \begin{array}{c} [1, 2, 3] \\ [0, 5, 6] \end{array} \right] \\ \left[ \begin{array}{c} [1, 2, 3] \\ [4, 5, 6] \end{array} \right] \end{array} \right]$

size (2, 2, 3, 3)

2 (of previous dimension)

2 (of previous dimension)

2 (of previous dimension)  
(2 blocks of 3rd dimension)

Tips  
• To find the dimension of an array, count the number of beginning brackets.  
• Match the inner-most bracket. Then match the next out-bracket counting the # of previous dimension blocks