

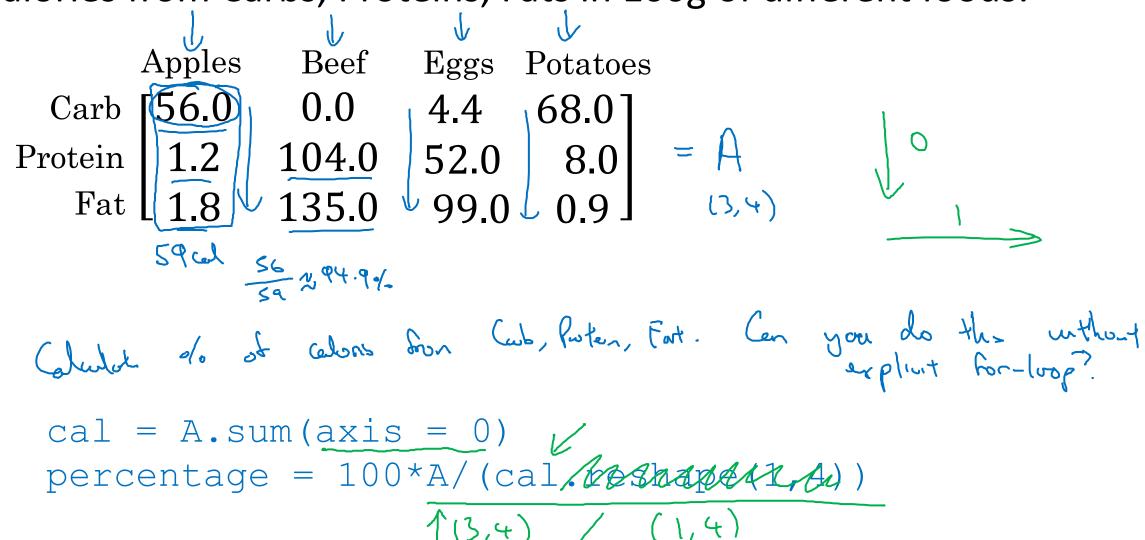
deeplearning.ai

Basics of Neural Network Programming

Broadcasting in Python

Broadcasting example

Calories from Carbs, Proteins, Fats in 100g of different foods:



Broadcasting example

$$\begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix} + \begin{bmatrix} 100 \\ 100 \\ 100 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ (m,n) & (2,3) \end{bmatrix} + \begin{bmatrix} 100 & 200 & 300 \\ 100 & 200 & 300 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} + \begin{bmatrix} 100 \\ 200 \end{bmatrix} = \begin{bmatrix} 100 \\ 000 \end{bmatrix} = \begin{bmatrix} 000 \\ 000 \end{bmatrix}$$

General Principle

$$(M, n) \qquad + \qquad (N, n) \qquad \sim (M, n)$$

$$(M, 1) \qquad + \qquad R$$

$$(M, 1) \qquad + \qquad 100 \qquad = \qquad \begin{bmatrix} 101 \\ 102 \\ 1 \end{bmatrix}$$

$$(N, 1) \qquad + \qquad 100 \qquad = \qquad \begin{bmatrix} 101 \\ 102 \\ 103 \end{bmatrix}$$

Mathab/Octave: bsxfun