Basics of Neural Network Programming

Broadcasting in Python

deeplearning.ai

Broadcasting example

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

$$
\begin{array}{c}
& \text{Apples} \quad \text{Beef} \quad \text{Eggs} \quad \text{Potatoes} \\
\begin{array}{c} \text{Carb} \\ \text{Protein} \\ \text{Fat} \end{array}
\begin{bmatrix}
56.0 & 0.0 & 4.4 & 68.0 \\
1.2 & 104.0 & 52.0 & 8.0 \\
1.8 & 135.0 & 99.0 & 0.9
\end{bmatrix}
\end{array}
$$

```
cal = A.sum(axis = 0)
percentage = 100*A/(cal.reshape(1,4))
```

Broadcasting example

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

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \qquad + \qquad \begin{bmatrix} 100 & 200 & 300 \end{bmatrix}$$

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

General Principle