

Full Numerical Walkthrough: "The cat sat"

Given (with position):

"the": [0.1, 0.4]
"cat": [0.6, 0.2]
"sat": [0.3, 0.65]

Step 1: Dot Products

$$\begin{aligned} \text{cat} \cdot \text{the} &= 0.06 + 0.08 = 0.14 \\ \text{cat} \cdot \text{cat} &= 0.36 + 0.04 = 0.40 \\ \text{cat} \cdot \text{sat} &= 0.18 + 0.13 = 0.31 \end{aligned}$$

Step 2: Softmax

$$\begin{aligned} e^{0.14} &= 1.15 \\ e^{0.40} &= 1.49 \\ e^{0.31} &= 1.36 \\ \text{Sum} &= 4.00 \end{aligned}$$

Percentages: 29%, 37%, 34%

Step 3: Weighted Combination

$$\begin{aligned} 0.29 \times [0.1, 0.4] \\ + 0.37 \times [0.6, 0.2] \\ + 0.34 \times [0.3, 0.65] \\ = [0.35, 0.41] \\ \leftarrow \text{New "cat" representation} \end{aligned}$$

