

1. Sequence Encoding

Base Sequence: I am a poet. I am very fond of ba

Alphabet: **labdefmnpqrstvy**

Probe Sequence: I am of very fond bananas. Am I Encode Cube zeros: [* labdefm* , * labnopr* , * ldenost* , * adfnpsv*]

2. Coordinate Decoding

Forward 0.502686173 0.627945425 0.687828386 0.144060143 t I am very fond of bananas I am a poet I am [v]

Backward 0.699727061 0.830323249 0.703470328 0.445862086 [v]ery fond of bananas I am a poet I am very fond

3. Distance Calculation

Between USM coordinates (Eq. 3-5):

$$d\left(\frac{\text{Forward: } 0.502686173 \quad 0.627945425 \quad 0.687828386 \quad 0.144060143}{\text{Backward: } 0.699727061 \quad 0.830323249 \quad 0.703470328 \quad 0.445862086}, \frac{\text{Forward: } 0.563843883 \quad 0.642092824 \quad 0.648593029 \quad 0.081797601}{\text{Backward: } 0.699379933 \quad 0.830087187 \quad 0.703935183 \quad 0.445802338}\right) = \begin{matrix} 2 \\ 10 \\ = 11 \end{matrix}$$

4. Sequence MapReduced comparison

t I am very fond of bananas I am a poet I am [v]ery fond of bananas I am a poet I am very fond

PROBE	forward	Map	[0.34, [0.17, [0.08, [0.04, [0.02, [0.51, [0.25, [0.12, [0.56, [0.28, [0.64, [0.82, [0.47, [0.37, 0.18, 0.09, 0.54, 0.27, 0.13, 0.56, 0.28, 0.64, 0.82, 0.41, 0.70, 0.30, 0.01, 0.50, 0.75, 0.37, 0.18, 0.59, 0.29, 0.64, 0.32, 0.66, 0.83, 0.40, 0.94] 0.47] 0.23] 0.61] 0.30] 0.65] 0.32] 0.16] 0.08] 0.54] 0.77] 0.88] 0.40]															
			[0.01, [0.03, [0.07, [0.14, [0.29, [0.58, [0.17, [0.34, [0.69, [0.39, [0.79, [0.59, [0.07, 0.14, 0.29, 0.58, 0.17, 0.35, 0.70, 0.41, 0.83, 0.66, 0.32, 0.64, 0.20, 0.19, 0.39, 0.79, 0.58, 0.16, 0.33, 0.67, 0.35, 0.70, 0.40, 0.81, 0.63, 0.20, 0.57] 0.15] 0.31] 0.63] 0.27] 0.55] 0.11] 0.22] 0.44] 0.89] 0.78] 0.56] 0.10]															
BASE	backward	Map																
	forward	backward	seq	l		a	m		o	f		v	e	r	y			
	[0.16,0.12,0.08,0.50]	[0.00,0.06,0.20,0.56]	I	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	[0.08,0.06,0.04,0.25]	[0.01,0.12,0.41,0.13]		0	5	0	0	1	0	0	1	0	0	0	0	0	1	
	[0.04,0.03,0.52,0.12]	[0.02,0.25,0.82,0.26]	a	0	0	5	0	0	0	0	0	0	0	0	0	0	0	
	[0.01,0.51,0.75,0.57]	[0.17,0.70,0.67,0.61]	m	0	0	0	5	0	0	0	0	0	0	0	0	0	0	
	[0.00,0.25,0.37,0.28]	[0.34,0.41,0.35,0.22]		0	1	0	0	5	0	0	11	0	0	0	0	0	1	
	[0.50,0.62,0.68,0.14]	[0.69,0.83,0.70,0.44]	v	0	0	0	0	0	0	0	0	11	0	0	0	0	0	
	[0.25,0.81,0.34,0.57]	[0.39,0.66,0.40,0.89]	e	0	0	0	0	0	0	0	0	0	11	0	0	0	0	
	[0.62,0.40,0.67,0.78]	[0.79,0.32,0.81,0.78]	r	0	0	0	0	0	0	0	0	0	0	11	0	0	0	
	[0.81,0.70,0.83,0.89]	[0.59,0.64,0.62,0.56]	y	0	0	0	0	0	0	0	0	0	0	0	11	0	0	
	[0.40,0.35,0.41,0.44]	[0.19,0.78,0.25,0.13]		0	1	0	0	1	0	0	1	0	0	0	0	0	1	