1. Sequence Encoding

Base Sequence: acggctgctatctgcgtacggtcgac   Alphabet: acgt

Probe Sequence: aaagctatctgaaaggtcaaa   Encode   Cube zeros: ["ac" , "ag"]

2. Coordinate Decoding

Coordinates are real numbers between 0 and 1, type and press Enter:

Single coordinate (binary decoding) 0.01   [0]000001010001110101110000101000111010111000010 1000111101

Forward 0.422583422 0.697652305 tctgcgtacggtcgacacggctgctatctgcgtacggtcgacacggctg[c]

Backward 0.339088847 0.864550215 [c]tatctgcgtacggtcgacacggctgctatctgcgtacggtcgacacggct

3. Distance Calculation

Between individual coordinates (Eq. 2):

d(0.01   , 0.001   ) = 6

Between USM coordinates (Eq. 3-5):

d(Forward: 0.422583422 0.697652305   ,   Forward: 0.251734376 0.502943755   ) =   2
    ─────────────────────────────   ─────────────────────────────   ─
    Backward: 0.339088847 0.864550215   Backward: 0.336792629 0.859558515   7

                                                                                = 8

4. Sequence MapReduce

tctgcgtacggtcgacacggctgctatctgcgtacggtcgacacggctg[c]tatctgcgtacggtcgacacggctgctatctgcgtacggtcgacacggct

forward	backward	seq	a	a	a	g	c	t	a	t	c	t	g	a	a	a	g	g	t	c	a	a	a	Sum	Max
PROBE forward Map	[0.02, 0.04]	[0.01, 0.02]	[0.00, 0.01]	[0.50, 0.00]	[0.25, 0.50]	[0.62, 0.75]	[0.31, 0.37]	[0.65, 0.68]	[0.32, 0.84]	[0.66, 0.92]	[0.83, 0.46]	[0.41, 0.23]	[0.20, 0.11]	[0.10, 0.05]	[0.55, 0.02]	[0.77, 0.01]	[0.88, 0.50]	[0.44, 0.75]	[0.22, 0.37]	[0.11, 0.18]	[0.05, 0.09]		
BASE backward Map	[0.08, 0.05]	[0.16, 0.10]	[0.33, 0.21]	[0.66, 0.42]	[0.33, 0.85]	[0.67, 0.71]	[0.34, 0.43]	[0.69, 0.87]	[0.38, 0.75]	[0.77, 0.50]	[0.55, 0.01]	[0.10, 0.02]	[0.21, 0.04]	[0.43, 0.09]	[0.87, 0.18]	[0.75, 0.37]	[0.50, 0.75]	[0.00, 0.50]	[0.01, 0.00]	[0.02, 0.01]	[0.04, 0.02]	Reduce to:	
[0.09,0.29] [0.21,0.30] a			1	1	1	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	2	1	1	11	2
[0.04,0.64] [0.42,0.60] c			0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3	1
[0.52,0.32] [0.85,0.21] g			0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	5	2
[0.76,0.16] [0.70,0.42] g			0	0	0	3	0	0	0	0	0	0	1	0	0	0	1	2	0	0	0	0	0	7	3
[0.38,0.58] [0.41,0.85] c			0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	7	3
[0.69,0.79] [0.83,0.71] t			0	0	0	0	0	3	0	1	0	3	0	0	0	0	0	0	1	0	0	0	0	8	3
[0.84,0.39] [0.66,0.43] g			0	0	0	8	0	0	0	0	0	0	3	0	0	0	1	1	0	0	0	0	0	13	8
[0.42,0.69] [0.33,0.86] c			0	0	0	0	8	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	11	8
[0.71,0.84] [0.67,0.72] t			0	0	0	0	0	8	0	1	0	2	0	0	0	0	0	0	1	0	0	0	0	12	8
[0.35,0.42] [0.35,0.45] a			1	1	1	0	0	0	8	0	0	0	0	1	1	1	0	0	0	0	1	1	1	17	8
[0.67,0.71] [0.71,0.91] t			0	0	0	0	0	1	0	8	0	1	0	0	0	0	0	0	2	0	0	0	0	12	8
[0.33,0.85] [0.42,0.83] c			0	0	0	0	2	0	0	0	8	0	0	0	0	0	0	0	0	2	0	0	0	12	8
[0.66,0.92] [0.85,0.66] t			0	0	0	0	0	2	0	1	0	8	0	0	0	0	0	0	1	0	0	0	0	12	8
[0.83,0.46] [0.70,0.33] g			0	0	0	2	0	0	0	0	0	0	8	0	0	0	1	1	0	0	0	0	0	12	8
[0.41,0.73] [0.40,0.66] c			0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	4	2
[0.70,0.36] [0.80,0.32] g			0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	2	0	0	0	0	0	5	2
[0.85,0.68] [0.61,0.64] t			0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	0	2	0	0	0	0	6	2
[0.42,0.34] [0.22,0.29] a			1	1	1	0	0	0	2	0	0	0	0	1	1	1	0	0	0	0	1	1	1	11	2
[0.21,0.67] [0.45,0.59] c			0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	3	1
[0.60,0.33] [0.90,0.19] g			0	0	0	1	0	0	0	0	0	0	1	0	0	0	4	1	0	0	0	0	0	7	4
[0.80,0.16] [0.81,0.39] g			0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	4	0	0	0	0	0	7	4
[0.90,0.58] [0.63,0.79] t			0	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	4	0	0	0	0	8	4
[0.45,0.79] [0.26,0.58] c			0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	4	0	0	0	7	4
[0.72,0.39] [0.52,0.16] g			0	0	0	1	0	0	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0	5	2
[0.36,0.19] [0.05,0.32] a			1	1	1	0	0	0	1	0	0	0	0	2	1	1	0	0	0	0	1	1	1	11	2
[0.18,0.59] [0.10,0.65] c			0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	4	2
Reduce to: Sum			4	4	4	18	19	17	12	14	19	16	18	5	4	4	12	13	11	13	5	4	4	220	109
Reduce to: Max			4	4	4	18	19	17	12	14	19	16	18	5	4	4	12	13	11	13	5	4	4	17	8