A Computational Analysis of a Novel Chromatic k-Nearest Neighbours Algorithm - Appendix 2D

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Scenario	gen	pre range	fast range	naive range	pre mode	fast mode	naive mode
Determining r value							
2D-10000-5-25-20-0-0	3.2	45.1	95.4	5.3	788.1	155.2	2.8
2D-10000-10-25-20-0-0	3.0	39.5	88.8	5.0	6391.3	54.1	2.6
2D-10000-25-25-20-0-0	3.1	39.6	88.9	5.1	73818.1	19.6	2.9
2D-10000-50-25-20-0-0	3.1	37.9	87.7	5.1	414470.6	11.8	2.7

Table 1: Computational results for 2D - Experiment to determine r value for artificial testing. All times averaged over 10 runs, presented in ms. r higher than 50 not computed due to preprocessing being > 1 hour per run.

Scenario	gen	pre range	fast range	naive range	pre mode	fast mode	naive mode
Uniform color scenarios							
2D-1-10-25-20-0-0	0.6	3.8	55.0	5.2	676.7	9.2	2.9
2D-1-10-50-20-0-0	0.5	3.5	54.1	14.0	632.8	7.8	5.0
2D-1-10-75-20-0-0	0.4	3.4	57.8	20.1	656.1	7.7	7.4
2D-1-10-100-20-0-0	0.5	3.3	59.7	26.2	655.4	8.8	9.9
2D-1-10-250-20-0-0	0.5	4.1	64.0	68.6	681.9	8.4	25.0
2D-1-10-500-20-0-0	0.4	3.6	67.2	137.1	668.1	8.3	53.0
2D-1-10-750-20-0-0	0.4	3.5	65.8	211.0	650.2	8.4	87.6
2D-10-10-25-20-0-0	3.2	44.9	105.2	5.2	6936.3	54.7	2.8
2D-10-10-50-20-0-0	3.0	40.3	97.7	10.5	6307.0	55.1	5.2
2D-10-10-75-20-0-0	3.0	39.0	99.3	16.6	6361.0	52.0	7.4
2D-10-10-100-20-0-0	3.1	37.7	100.1	22.1	6210.0	51.4	10.2
2D-10-10-250-20-0-0	2.8	37.5	103.8	60.4	6603.2	54.2	22.0
2D-10-10-500-20-0-0	2.9	36.0	109.6	126.4	6282.5	60.5	42.7
2D-10-10-750-20-0-0	2.9	36.5	123.8	204.6	6270.4	50.6	64.6
2D-10-10-1000-20-0-0	2.8	35.5	113.4	275.9	6207.2	56.0	85.0
2D-10-10-1500-20-0-0	3.2	37.9	122.7	436.0	6469.5	55.7	138.6
2D-10-10-2000-20-0-0	2.8	37.1	132.5	616.6	6548.1	58.0	197.3
2D-100-10-25-20-0-0	32.3	582.3	211.0	5.5	75144.4	613.4	3.4
2D-100-10-50-20-0-0	29.8	493.4	194.2	10.6	70585.6	506.4	5.8
2D-100-10-75-20-0-0	32.0	540.4	211.8	17.6	76704.1	608.0	8.7
2D-100-10-100-20-0-0	33.0	524.9	230.2	25.3	73328.3	611.6	10.7
2D-100-10-250-20-0-0	33.4	525.8	218.6	63.0	76539.4	579.0	23.1
2D-100-10-500-20-0-0	31.6	495.3	225.7	133.9	69225.4	556.6	43.5
2D-100-10-750-20-0-0	28.8	494.2	223.5	206.6	67817.8	511.4	63.8
2D-100-10-1000-20-0-0	28.5	475.3	227.0	279.0	67009.8	548.4	86.1
2D-100-10-1500-20-0-0	29.6	497.3	236.0	429.1	69944.6	475.3	126.5
2D-100-10-2000-20-0-0	29.6	474.2	237.0	593.1	68188.9	554.8	168.5
2D-1-10-25-100-0-0	0.4	3.0	50.4	5.1	624.0	10.2	2.7
2D-1-10-50-100-0-0	0.4	2.9	52.5	11.7	643.2	9.8	5.5
2D-1-10-75-100-0-0	0.4	2.9	53.4	17.6	630.1	9.8	8.3
2D-1-10-100-100-0-0	0.5	3.1	54.9	23.6	639.4	9.8	11.7
2D-1-10-250-100-0-0	0.4	3.0	60.1	62.7	639.6	10.0	30.6
2D-1-10-500-100-0-0	0.4	3.0	61.0	125.8	619.6	9.3	65.8
2D-1-10-750-100-0-0	0.4	2.9	63.1	200.5	628.8	9.2	108.6
2D-10-10-25-100-0-0	2.7	35.7	85.8	5.1	6685.2	65.7	2.8
2D-10-10-50-100-0-0	2.8	34.8	89.0	10.4	6101.4	59.9	5.5
2D-10-10-75-100-0-0	2.7	35.0	90.0	15.8	6448.8	66.5	8.5
2D-10-10-100-100-0-0	2.7	35.7	93.3	21.9	6172.8	69.6	11.4
2D-10-10-250-100-0-0	2.7	35.0	100.0	59.1	6243.0	76.2	29.6
2D-10-10-500-100-0-0	2.8	35.1	104.9	124.3	6593.1	63.8	55.0
2D-10-10-750-100-0-0	2.7	34.9	105.7	201.0	6331.8	61.9	81.1
2D-10-10-1000-100-0-0	3.1	36.9	109.6	275.1	6484.7	68.7	108.7
2D-10-10-1500-100-0-0	2.7	34.9	111.5	429.8	6400.7	68.3	166.2
2D-10-10-2000-100-0-0	2.7	34.3	114.3	585.2	6137.8	71.1	220.5
2D-100-10-25-100-0-0	28.4	474.2	176.2	5.3	71600.1	626.0	3.3
2D-100-10-50-100-0-0	27.7	471.3	187.3	11.7	71418.1	555.7	6.0
2D-100-10-75-100-0-0	29.3	496.0	189.0	16.5	69644.1	571.2	9.0
2D-100-10-100-100-0-0	29.8	485.2	194.3	22.6	71292.2	594.9	12.1
2D-100-10-250-100-0-0	29.1	479.4	204.3	60.6	72562.4	599.7	29.6
2D-100-10-500-100-0-0	29.4	486.8	217.3	129.8	70342.2	586.3	55.5
2D-100-10-750-100-0-0	29.1	495.7	225.0	203.2	74322.5	627.6	82.7
2D-100-10-1000-100-0-0	28.6	482.6	227.5	276.0	72204.5	612.4	110.0
2D-100-10-1500-100-0-0	31.1	519.4	249.7	441.6	71730.3	604.4	162.2
2D-100-10-2000-100-0-0	29.7	483.1	237.2	592.7	70335.0	592.3	218.3

Table 2: Computational results for 2D - Generated Uniform with $r = 10$. All times averaged over 10 runs, presented in ms.

Scenario	gen	pre range	fast range	naive range	pre mode	fast mode	naive mode
Clustered color scenarios							
2D-1-10-25-20-30-90	0.4	2.9	49.2	4.9	572.2	5.3	1.6
2D-1-10-50-20-30-90	0.5	3.0	53.6	12.2	598.2	5.3	3.2
2D-1-10-75-20-30-90	0.4	3.2	54.4	17.7	583.8	5.2	4.7
2D-1-10-100-20-30-90	0.4	3.1	54.6	23.7	581.6	5.2	6.3
2D-1-10-250-20-30-90	0.4	2.9	59.2	62.2	579.0	5.2	17.3
2D-1-10-500-20-30-90	0.4	3.0	62.2	129.2	607.5	5.6	41.0
2D-1-10-750-20-30-90	0.4	2.9	63.0	200.8	593.1	5.4	71.4
2D-10-10-25-20-30-90	2.8	35.9	85.8	5.0	5798.0	44.7	1.7
2D-10-10-50-20-30-90	3.1	36.2	90.2	10.3	5827.3	44.4	3.3
2D-10-10-75-20-30-90	2.8	35.8	91.3	16.2	6055.5	46.7	4.7
2D-10-10-100-20-30-90	2.9	34.9	96.7	22.0	5926.6	41.6	6.5
2D-10-10-250-20-30-90	2.8	34.9	99.1	58.5	5816.1	38.9	16.7
2D-10-10-500-20-30-90	2.8	34.7	105.6	123.5	5956.0	49.7	34.6
2D-10-10-750-20-30-90	2.8	35.4	105.4	197.7	5821.7	46.2	52.3
2D-10-10-1000-20-30-90	2.8	33.9	110.0	266.9	5721.0	43.9	72.5
2D-10-10-1500-20-30-90	2.8	34.4	110.2	421.8	5922.7	42.7	113.1
2D-10-10-2000-20-30-90	2.9	37.3	116.9	585.5	5903.4	41.3	161.9
2D-100-10-25-20-30-90	29.5	467.9	178.7	5.4	69288.7	447.0	2.0
2D-100-10-50-20-30-90	30.0	473.2	188.4	10.9	68492.0	461.9	3.6
2D-100-10-75-20-30-90	29.8	474.2	190.0	16.2	67453.7	532.9	5.0
2D-100-10-100-20-30-90	29.9	500.6	196.2	23.2	66822.1	461.2	6.6
2D-100-10-250-20-30-90	31.0	494.0	207.9	60.8	68632.0	497.4	17.0
2D-100-10-500-20-30-90	30.5	480.8	219.9	130.3	65750.5	498.7	34.1
2D-100-10-750-20-30-90	30.6	483.4	225.7	200.0	67892.0	449.6	52.1
2D-100-10-1000-20-30-90	31.0	487.6	226.9	275.7	67423.9	455.0	72.5
2D-100-10-1500-20-30-90	30.0	482.2	232.9	441.0	66759.2	476.2	112.5
2D-100-10-2000-20-30-90	30.3	484.4	239.3	600.9	68398.9	408.5	149.1
2D-1-10-25-100-200-90	0.6	3.0	50.2	5.0	589.6	5.3	1.7
2D-1-10-50-100-200-90	0.5	3.0	53.2	12.0	589.7	5.5	3.1
2D-1-10-75-100-200-90	0.5	3.0	55.6	17.9	609.4	5.6	4.9
2D-1-10-100-100-200-90	0.5	3.0	57.2	24.0	587.8	5.3	6.7
2D-1-10-250-100-200-90	0.5	3.1	60.4	62.8	608.4	5.6	18.5
2D-1-10-500-100-200-90	0.5	3.1	63.9	131.3	599.2	5.8	42.4
2D-1-10-750-100-200-90	0.5	2.9	63.2	202.3	589.2	5.2	73.2
2D-10-10-25-100-200-90	2.9	34.9	84.5	5.0	5847.8	49.2	1.8
2D-10-10-50-100-200-90	3.1	37.6	92.5	10.6	6054.4	46.7	3.3
2D-10-10-75-100-200-90	3.0	36.5	93.8	16.6	5997.2	46.5	5.0
2D-10-10-100-100-200-90	2.8	34.2	92.7	22.1	6089.0	48.7	6.4
2D-10-10-250-100-200-90	2.9	35.4	101.9	58.7	5881.3	46.2	16.2
2D-10-10-500-100-200-90	2.9	34.9	108.0	123.4	6037.3	47.0	35.7
2D-10-10-750-100-200-90	2.8	34.6	109.9	201.9	5823.8	44.8	54.0
2D-10-10-1000-100-200-90	2.9	35.3	109.9	275.5	6017.8	47.3	75.3
2D-10-10-1500-100-200-90	3.0	35.5	115.2	432.5	6049.4	43.3	118.2
2D-10-10-2000-100-200-90	2.9	36.5	112.8	587.5	5985.7	47.6	160.0
2D-100-10-25-100-200-90	29.4	468.1	177.2	5.2	69583.3	493.5	2.0
2D-100-10-50-100-200-90	30.2	500.2	187.2	11.0	68245.9	462.6	3.6
2D-100-10-75-100-200-90	30.6	490.9	190.4	16.4	64254.0	512.1	5.3
2D-100-10-100-100-200-90	30.3	484.8	196.8	22.4	70649.1	528.1	6.9
2D-100-10-250-100-200-90	29.7	497.1	209.2	60.5	67764.7	531.1	17.2
2D-100-10-500-100-200-90	31.7	492.4	217.1	125.4	67766.3	448.2	35.4
2D-100-10-750-100-200-90	30.3	502.4	227.6	198.1	67898.4	491.1	54.5
2D-100-10-1000-100-200-90	30.3	493.7	229.2	279.6	66840.3	464.7	74.6
2D-100-10-1500-100-200-90	30.4	478.6	239.1	432.0	70350.7	557.4	112.6
2D-100-10-2000-100-200-90	30.8	497.0	239.0	586.9	66546.4	460.7	161.4

Table 3: Computational results for 2D - Generated Clustered Colors with $r = 10$. All times averaged over 10 runs, presented in ms.