

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

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Scenario	gen	pre range	fast range	naive range	pre mode	fast mode	naive mode
Uniform color scenarios							
2D-1000-25-20-0-0	0.5	3.7	57.5	5.5	91.1	18.0	2.7
2D-1000-50-20-0-0	0.5	3.4	54.1	13.2	78.1	15.1	4.9
2D-1000-75-20-0-0	0.5	3.4	57.4	18.6	77.5	15.8	7.3
2D-1000-100-20-0-0	0.5	3.5	58.3	24.7	76.5	16.2	9.4
2D-1000-250-20-0-0	0.5	3.5	62.5	64.8	77.6	15.5	23.3
2D-1000-500-20-0-0	0.5	3.4	65.2	133.4	80.6	14.7	50.6
2D-1000-750-20-0-0	0.5	3.6	65.4	209.1	77.6	14.9	83.7
2D-10000-25-20-0-0	3.1	39.5	89.6	5.2	736.0	138.6	2.7
2D-10000-50-20-0-0	2.9	37.8	95.2	10.9	741.7	130.9	5.0
2D-10000-75-20-0-0	2.9	36.9	99.7	17.0	785.6	149.2	7.3
2D-10000-100-20-0-0	2.9	37.5	97.8	23.1	754.0	136.1	9.0
2D-10000-250-20-0-0	2.8	37.2	107.2	62.1	741.7	136.7	20.7
2D-10000-500-20-0-0	2.9	36.8	113.2	130.2	771.5	137.7	41.3
2D-10000-750-20-0-0	2.9	36.2	113.7	208.7	758.7	147.0	63.1
2D-10000-1000-20-0-0	2.9	36.9	118.5	284.3	763.0	135.0	85.2
2D-10000-1500-20-0-0	2.8	36.2	122.5	445.3	765.7	144.4	131.9
2D-10000-2000-20-0-0	2.8	36.0	122.2	612.0	743.3	150.0	180.0
2D-100000-25-20-0-0	30.7	536.5	204.6	5.6	9244.2	1386.5	3.1
2D-100000-50-20-0-0	32.7	576.9	230.0	12.7	9237.2	1717.8	6.3
2D-100000-75-20-0-0	32.7	595.2	232.4	18.7	9206.1	1663.1	8.5
2D-100000-100-20-0-0	32.5	589.8	238.5	24.9	9570.8	1600.7	10.8
2D-100000-250-20-0-0	31.8	559.8	238.4	66.0	9064.6	1728.6	24.3
2D-100000-500-20-0-0	31.1	564.7	257.0	144.7	9399.2	1719.6	47.0
2D-100000-750-20-0-0	32.8	601.9	277.1	233.9	9658.8	1686.8	73.3
2D-100000-1000-20-0-0	34.2	632.5	293.1	321.8	9604.8	1841.6	95.9
2D-100000-1500-20-0-0	31.2	544.9	278.6	470.7	9253.4	1705.7	136.8
2D-100000-2000-20-0-0	31.9	552.2	286.0	663.7	9349.6	1560.6	187.7
2D-1000-25-100-0-0	0.5	3.4	54.3	5.2	83.6	23.5	2.8
2D-1000-50-100-0-0	0.5	3.2	56.8	12.5	80.0	21.2	5.8
2D-1000-75-100-0-0	0.4	3.3	57.7	18.9	82.7	21.9	8.9
2D-1000-100-100-0-0	0.4	3.4	59.9	25.1	85.7	20.9	12.5
2D-1000-250-100-0-0	0.5	3.6	66.9	67.3	86.8	21.5	33.2
2D-1000-500-100-0-0	0.4	3.1	67.1	137.7	84.9	22.2	68.6
2D-1000-750-100-0-0	0.5	3.2	68.5	216.0	82.9	24.5	114.1
2D-10000-25-100-0-0	3.1	38.8	96.6	5.4	802.2	178.1	2.9
2D-10000-50-100-0-0	3.0	37.8	100.8	11.1	807.4	161.3	5.9
2D-10000-75-100-0-0	3.0	38.4	105.3	17.6	790.2	176.0	8.7
2D-10000-100-100-0-0	3.1	38.3	106.5	23.2	803.0	164.3	11.9
2D-10000-250-100-0-0	3.1	40.8	124.2	65.8	857.3	183.3	31.1
2D-10000-500-100-0-0	3.2	38.6	138.6	137.5	833.5	180.0	58.9
2D-10000-750-100-0-0	3.4	39.0	132.9	223.0	895.0	193.3	88.7
2D-10000-1000-100-0-0	3.1	41.2	145.8	313.8	906.2	175.8	119.7
2D-10000-1500-100-0-0	3.2	41.9	145.3	484.0	892.9	187.9	180.3
2D-10000-2000-100-0-0	3.0	39.3	136.3	639.8	823.1	175.6	236.2
2D-100000-25-100-0-0	31.5	522.6	200.7	5.6	9303.1	1847.2	3.6
2D-100000-50-100-0-0	31.1	535.1	206.4	11.6	8676.7	1887.8	6.6
2D-100000-75-100-0-0	31.5	547.6	222.4	17.9	9054.4	1788.6	9.7
2D-100000-100-100-0-0	32.6	552.5	233.0	25.1	9787.3	1868.8	13.2
2D-100000-250-100-0-0	30.7	527.2	226.7	64.5	8902.3	1845.6	30.7
2D-100000-500-100-0-0	30.6	533.6	240.7	136.8	9196.0	1778.1	58.0
2D-100000-750-100-0-0	31.3	525.2	248.6	212.7	9283.1	1644.8	87.0
2D-100000-1000-100-0-0	35.1	598.5	281.1	313.6	10225.5	1875.0	124.1
2D-100000-1500-100-0-0	35.0	569.6	279.3	498.0	9630.1	1991.3	179.0
2D-100000-2000-100-0-0	32.6	573.8	303.0	669.3	9868.2	1820.0	237.4

Table 1: Computational results for 2D - Generated Uniform with  $r = 5$ . 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-1000-25-20-30-0.9	4.6	3.6	56.4	5.6	81.7	15.8	2.3
2D-1000-50-20-30-0.9	4.6	3.6	59.7	13.2	81.4	13.9	4.4
2D-1000-75-20-30-0.9	4.6	3.6	62.5	20.7	83.5	14.7	6.3
2D-1000-100-20-30-0.9	4.6	3.6	62.4	26.2	81.1	16.0	8.2
2D-1000-250-20-30-0.9	4.5	3.4	67.0	68.5	81.5	16.1	22.1
2D-1000-500-20-30-0.9	4.6	3.6	72.4	145.1	82.0	14.2	51.9
2D-1000-750-20-30-0.9	4.6	3.8	72.7	230.1	84.5	16.0	89.5
2D-10000-25-20-30-0.9	493.7	42.9	115.6	5.7	811.7	138.4	2.4
2D-10000-50-20-30-0.9	494.9	42.5	118.3	11.7	842.6	158.6	4.4
2D-10000-75-20-30-0.9	496.5	41.0	114.5	17.3	844.6	134.9	6.6
2D-10000-100-20-30-0.9	498.1	42.5	126.6	25.1	858.3	139.1	8.2
2D-10000-250-20-30-0.9	491.2	43.1	131.9	66.7	859.4	138.7	20.2
2D-10000-500-20-30-0.9	497.9	41.7	128.4	140.9	847.1	151.3	41.2
2D-10000-750-20-30-0.9	500.4	42.5	151.1	230.3	879.8	170.8	64.6
2D-10000-1000-20-30-0.9	515.5	45.6	159.7	321.5	899.5	152.9	89.3
2D-10000-1500-20-30-0.9	519.0	43.9	166.5	518.3	848.3	136.6	144.5
2D-10000-2000-20-30-0.9	499.4	42.2	158.1	673.7	846.4	154.3	188.7
2D-100000-25-20-30-0.9	77991.7	555.2	210.0	5.8	9095.2	1546.9	2.9
2D-100000-50-20-30-0.9	76966.9	595.4	239.6	12.4	9537.5	1483.5	5.3
2D-100000-75-20-30-0.9	71004.0	569.1	239.5	18.4	9218.3	1516.0	7.0
2D-100000-100-20-30-0.9	77322.4	596.3	235.9	25.6	9563.2	1494.9	9.4
2D-100000-250-20-30-0.9	74275.4	585.3	269.6	70.5	9237.1	1686.3	23.1
2D-100000-500-20-30-0.9	75818.8	574.4	259.9	142.4	9233.4	1471.9	44.5
2D-100000-750-20-30-0.9	77071.1	601.7	264.2	225.0	9799.3	1617.5	69.7
2D-100000-1000-20-30-0.9	74629.5	588.3	279.5	316.5	9289.6	1566.5	85.3
2D-100000-1500-20-30-0.9	74668.4	578.7	287.4	499.8	9136.4	1606.4	136.6
2D-100000-2000-20-30-0.9	65063.5	531.8	268.6	644.4	8750.4	1502.5	174.8
2D-1000-25-100-200-0.9	4.9	3.3	50.2	5.0	75.1	17.4	2.4
2D-1000-50-100-200-0.9	4.9	3.2	53.6	12.0	75.7	16.7	4.6
2D-1000-75-100-200-0.9	4.8	3.1	55.6	18.7	75.3	16.6	6.6
2D-1000-100-100-200-0.9	4.9	3.1	57.5	23.4	76.1	15.8	9.1
2D-1000-250-100-200-0.9	4.8	3.1	61.5	64.2	74.3	16.6	23.9
2D-1000-500-100-200-0.9	4.8	3.2	63.9	131.5	75.3	16.5	55.8
2D-1000-750-100-200-0.9	5.2	3.4	65.8	207.3	76.4	16.9	99.8
2D-10000-25-100-200-0.9	457.5	37.0	89.2	5.1	767.2	133.0	2.5
2D-10000-50-100-200-0.9	453.0	35.6	92.6	11.1	760.0	140.4	4.6
2D-10000-75-100-200-0.9	448.7	36.0	96.3	16.6	763.3	153.7	6.5
2D-10000-100-100-200-0.9	447.6	36.2	97.6	22.2	726.9	142.6	8.8
2D-10000-250-100-200-0.9	448.2	36.0	105.5	61.6	712.3	135.7	20.6
2D-10000-500-100-200-0.9	445.6	35.1	106.8	127.5	753.3	152.3	41.9
2D-10000-750-100-200-0.9	446.2	35.5	111.8	206.9	750.5	153.0	63.6
2D-10000-1000-100-200-0.9	453.1	35.8	115.6	281.2	732.3	144.5	86.1
2D-10000-1500-100-200-0.9	456.1	36.0	113.9	436.2	754.3	136.6	135.4
2D-10000-2000-100-200-0.9	453.2	35.4	117.4	599.6	758.7	150.1	188.3
2D-100000-25-100-200-0.9	59052.8	524.1	193.8	5.3	9238.8	1524.4	3.3
2D-100000-50-100-200-0.9	52512.1	495.4	194.3	11.0	8478.3	1427.2	5.0
2D-100000-75-100-200-0.9	57017.4	500.4	199.6	17.5	8609.6	1500.9	7.5
2D-100000-100-100-200-0.9	67664.5	561.6	237.2	24.2	9034.1	1754.1	10.3
2D-100000-250-100-200-0.9	64806.4	542.4	235.5	66.1	8548.0	1719.5	22.9
2D-100000-500-100-200-0.9	50766.4	474.8	217.2	129.7	8271.6	1501.3	41.7
2D-100000-750-100-200-0.9	49059.3	468.9	223.7	203.8	8515.4	1361.3	61.9
2D-100000-1000-100-200-0.9	49364.5	472.0	227.2	282.3	8484.8	1382.7	84.4
2D-100000-1500-100-200-0.9	49689.1	471.1	233.9	437.5	8319.6	1330.6	128.0
2D-100000-2000-100-200-0.9	49283.6	464.8	235.8	604.3	8257.8	1423.7	171.4

Table 2: Computational results for 2D - Generated Clustered Colors with  $r = 5$ . All times averaged over 10 runs, presented in ms.