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Lab 4 Computation / Design Process

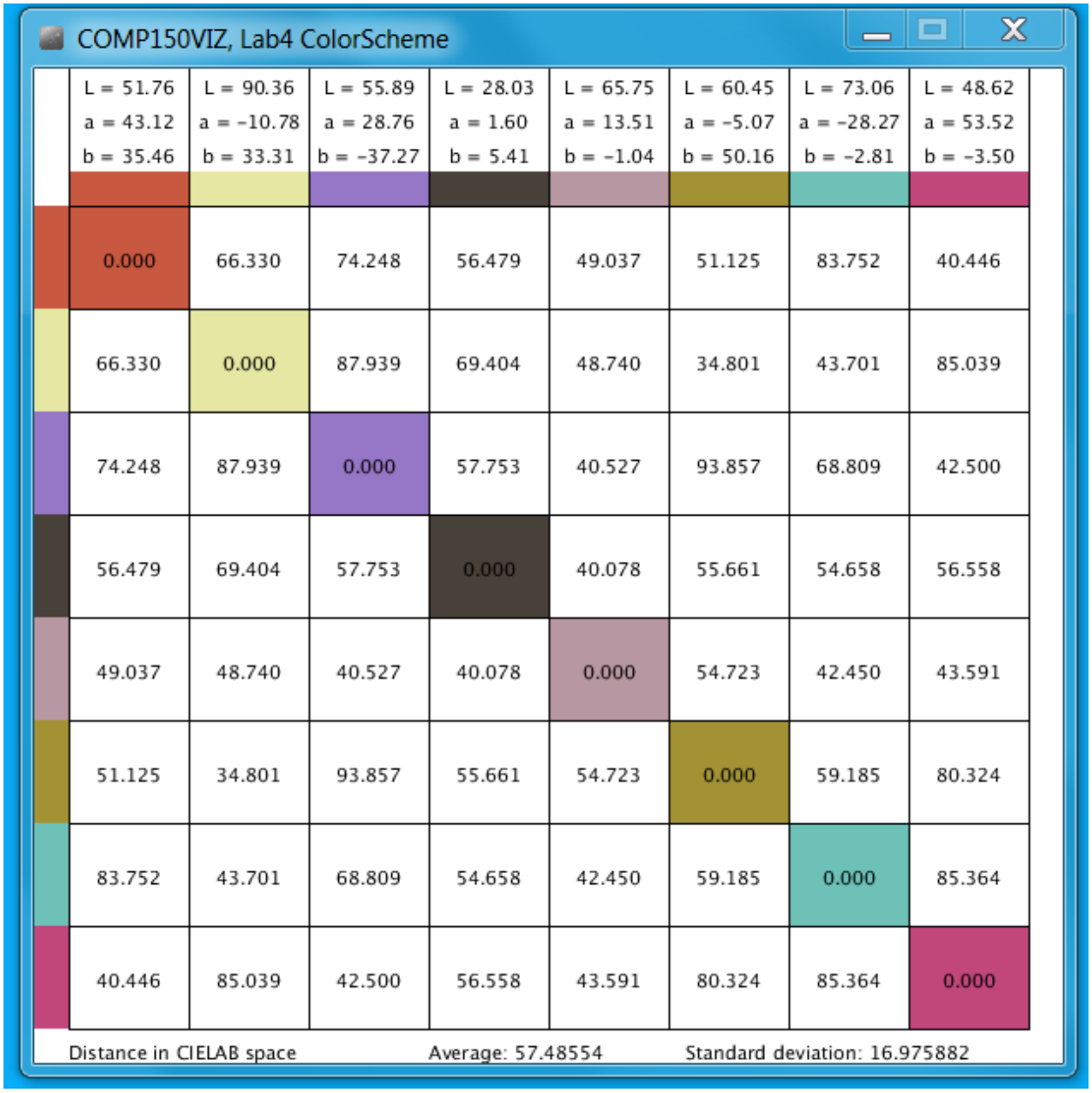
We first run a Monte Carlo sampling of the 8-color RGB space. Each simulation consists of 10,000 samples, during which the sample with the lowest standard deviation is kept track of. After each of the 10,000 samples the simulation presents the best sample as a ColorScheme palette.

This simulation process repeats 500 times, with the computer automating the process of taking screenshots of the palette. We proceed by glancing through the 500 palettes, picking the 10 “best” palettes based on the standard deviation, average distance, and the visual appeal / distinctiveness of the 8 colors.

Of these 10 screenshots we now come to a consensus on which one to select for further refinement. Palette #375 is shown below in the first image, our top choice of the 500 Monte Carlo palettes. In the second image we see the result of manually refining the RGB values of certain colors.

Our main focus in refining the colors is reducing the standard deviation (making the colors more equidistant), and making certain colors more distinct from each other. In palette #375 in particular, the two “greens” go from being very similar in the first image to being very distinct in the second image namely by changing the first “green” to a “yellow”. Although this change worsens the differential between the 2nd and 6th colors in the palette, it is more visually appealing from our perspective because the two “yellows” in the second image ***appear*** to be more distinct than the two “greens” in the first image (even though the actual distances in RGB space say otherwise!).


COMP150VIZ, Lab4 ColorScheme
L = 49.76 a = 43.12 b = 35.46
L = 75.36 a = -42.78 b = 55.31
L = 50.89 a = 43.76 b = -42.27
L = 28.03 a = 3.60 b = 5.41
L = 65.75 a = 3.51 b = -17.04
L = 65.45 a = 1.07 b = 45.16
L = 73.06 a = -28.27 b = 12.81
L = 48.62 a = 45.52 b = -4.22
0.000 91.809 77.744 54.191 67.677 45.921 78.436 39.766
91.809 0.000 132.708 82.952 86.426 46.088 44.970 109.796
77.744 132.708 0.000 66.406 49.778 98.382 93.349 38.163
54.191 82.952 66.406 0.000 43.895 54.643 55.657 47.683
67.677 86.426 49.778 43.895 0.000 62.241 44.206 47.136
45.921 46.088 98.382 54.643 62.241 0.000 44.327 68.532
78.436 44.970 93.349 55.657 44.206 44.327 0.000 79.568
39.766 109.796 38.163 47.683 47.136 68.532 79.568 0.000
Distance in CIELAB space
Average: 63.8776
Standard deviation: 23.640802


COMP150VIZ, Lab4 ColorScheme
L = 51.76 a = 43.12 b = 35.46
L = 90.36 a = −10.78 b = 33.31
L = 55.89 a = 28.76 b = −37.27
L = 28.03 a = 1.60 b = 5.41
L = 65.75 a = 13.51 b = −1.04
L = 60.45 a = −5.07 b = 50.16
L = 73.06 a = −28.27 b = −2.81
L = 48.62 a = 53.52 b = −3.50
0.000 66.330 74.248 56.479 49.037 51.125 83.752 40.446
66.330 0.000 87.939 69.404 48.740 34.801 43.701 85.039
74.248 87.939 0.000 57.753 40.527 93.857 68.809 42.500
56.479 69.404 57.753 0.000 40.078 55.661 54.658 56.558
49.037 48.740 40.527 40.078 0.000 54.723 42.450 43.591
51.125 34.801 93.857 55.661 54.723 0.000 59.185 80.324
83.752 43.701 68.809 54.658 42.450 59.185 0.000 85.364
40.446 85.039 42.500 56.558 43.591 80.324 85.364 0.000
Distance in CIELAB space
Average: 57.48554
Standard deviation: 16.975882