Appendix C. Detailed segmentation statistics.

The tables is this appendix show distribution statistics, by finger position, for the segmentation algorithms tested as compared to the hand marked ground truth for 3-inch slap images. The differences between the segmentation algorithm and ground truth are sorted into bins based on the tolerances allowed for correct segmentation. Specifically, the left/right edges must be within -32/+64 pixels of the ground truth, top edge -64/+64 and bottom edge -64/+128. For each finger position there is a column for each of the four segmentation box edges (L, R, T and B).

The first row ("No Finger Found") shows the counts for when a finger was not detected by the segmentation algorithm. The next four rows show statistics for segmentation edges that are within the specified minimum (MN) and maximum (MX) pixel tolerances compared to the ground truth, so these are considered good segmentations. Rows 1 (MN <= d < 0) and 3 (0 <= d <= MX) show the average value for all differences in that range and rows 3 and 5 show the total count occurring in that range.

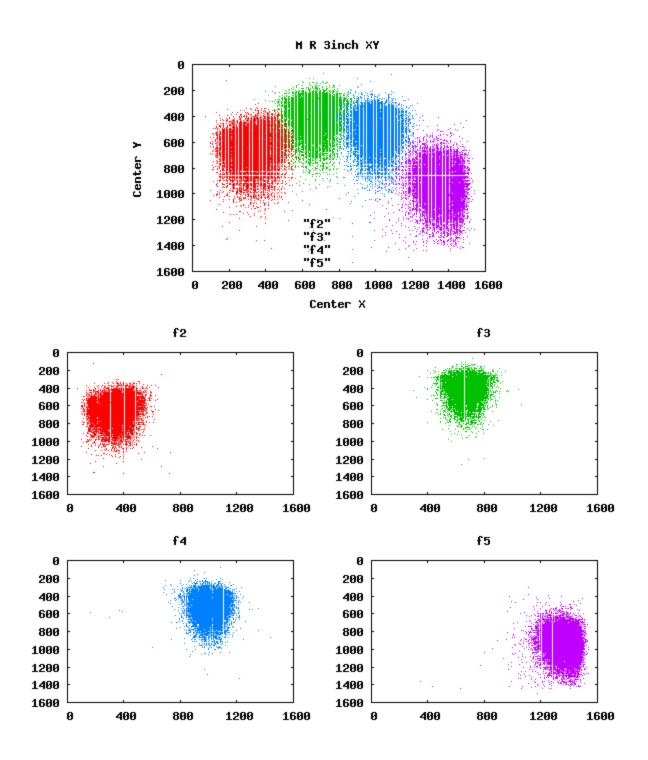
Rows 6-9 also show average difference values and bin counts but for ranges $MN-32 \le d \le MN$ and $MX \le d \le MX+32$, which are just outside the accepted tolerance ranges. Rows 10-13 tally everything greater than 32 pixels away from the accepted tolerance range, $d \le MN-32$ and d > MX+32.

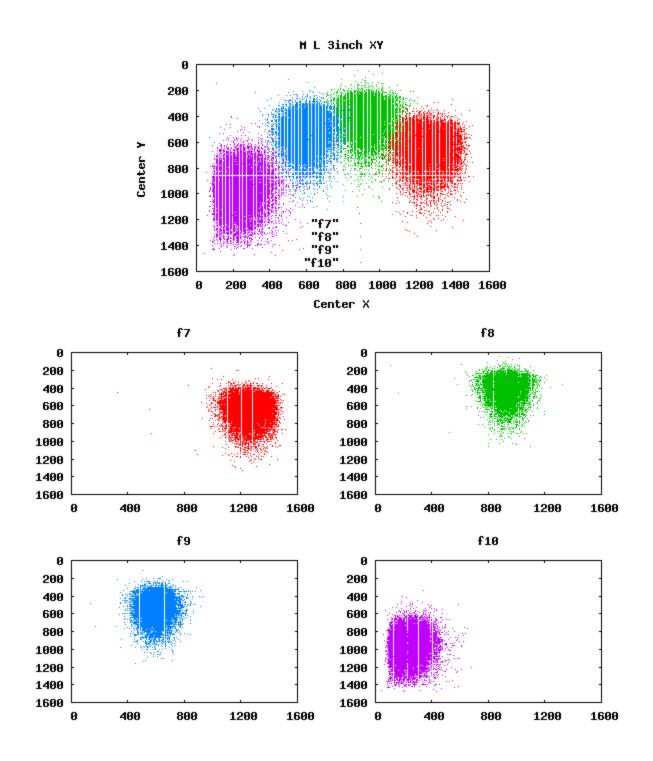
The last three rows show the total count for each bin, the overall average difference value and the standard deviation of all the difference values.

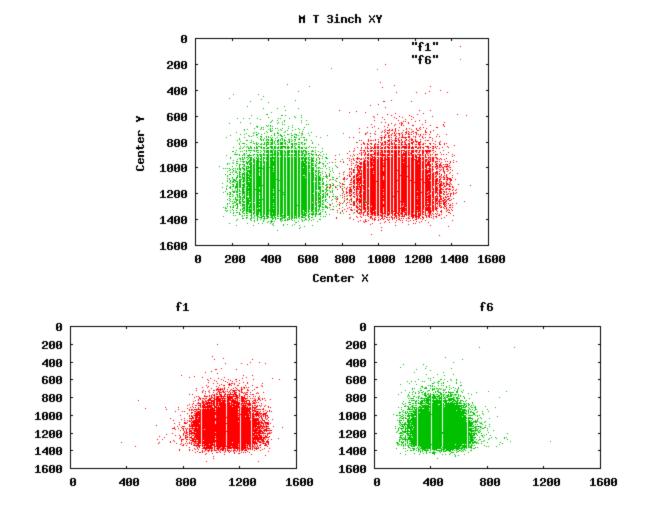
| | | | | | | | | | M = / | Aware | | | | | | | | | | | |
|--|--|--|--|--|--|--|---|--|--|--|--|---|--|--|--|--|--|---|--|---|--|
| | R. Thumb | | | | | R. In | dex | | | R Middle | | | | R. Ring | | | | R. Little | | | |
| No Finger Found | 126 | | | | 36 | | | | | 36 | | | 42 | | | | 90 | | | | |
| | L | R | Т | В | L | R | Т | В | L | R | Т | В | L | R | Т | В | L | R | Т | В | |
| MN <= d < 0 | -11.30 | -7.96 | -18.21 | -23.76 | -11.99 | -5.18 | -22.91 | -22.58 | -11.78 | -5.45 | -23.05 | -22.11 | -9.04 | -6.97 | -22.72 | -21.84 | -8.88 | -6.55 | -21.90 | -21.77 | |
| # | 18486 | 10473 | 22462 | 16704 | 21858 | 2391 | 23515 | 18300 | 21000 | 4469 | 23448 | 14374 | 17805 | 6617 | 23368 | 15141 | 17398 | 6565 | 22878 | 18542 | |
| 0 <= d <= MX | 6.64 | 9.58 | 6.69 | 29.40 | 5.17 | 12.65 | 6.52 | 18.02 | 5.71 | 10.63 | 5.99 | 25.55 | 5.19 | 10.18 | 6.01 | 24.89 | 5.10 | 9.75 | 6.14 | 20.78 | |
| # | 5503 | 13384 | 1696 | 4930 | 2890 | 22486 | 1342 | 5956 | 3761 | 20397 | 1429 | 8636 | 7047 | 18170 | 1469 | 7452 | 7219 | 18012 | 1724 | 4737 | |
| | | | | | | | | | | | | | | | | | | ~~~~ | | | |
| MN-32 <= d < MN | -36.76 | -42.78 | -79.32 | -77.16 | -39.22 | -40.24 | -73.79 | -77.18 | -36.82 | -39.08 | -76.98 | -78.88 | -39.18 | -39.15 | -74.49 | -78.90 | -40.57 | -39.37 | -78.71 | -78.15 | |
| | 221 | 233 | 57 | 1132 | 164 | 19 | 35 | 329 | 150 | 30 | 30 | 741 | 47 | 97 | 42 | 991 | 98 | 89 | 85 | 822 | |
| MX < d <= MX+32 | 76.53 | 74.94 | 79.92 | 142.79 | 73.25 | 77.75 | 75.00 | 140.40 | 77.00 | 72.47 | 82.10 | 140.48 | 83.92 | 70.03 | 79.43 | 139.78 | 70.25 | 78.91 | 78.33 | 143.47 | |
| # | 19 | 58 | 6 | 266 | 4 | 12 | 9 | 36 | 5 | 16 | 5 | 166 | 6 | 16 | 7 | 121 | 6 | 49 | 9 | 90 | |
| d < MN-32 | -322.85 | -668.74 | -238.85 | -280.29 | -264.69 | -379.13 | -516.84 | -223.00 | -418.30 | -673.92 | -176.40 | -167.62 | -434.64 | -826.53 | -261.04 | -157.92 | -131.17 | -696.48 | -358.02 | -286.51 | |
| u < 1v119-52 | -522.85 | -668.74 242 | -238.85 69 | 1091 | | -379.13 | -516.84 22 | 295 | -418.50 | -073.92 42 | | 956 | -434.04 | -820.55 57 | -261.04 26 | 1207 | -131.17 | -696.48 218 | -358.02 151 | 534 | |
| d > MX+32 | 680.17 | 412.91 | 871.05 | 226.88 | 16 253.24 | 346.56 | 356.40 | 390.79 | 490.29 | 409.29 | 24 242.41 | 209.73 | 688.71 | 361.77 | 303.79 | 239.35 | 661.89 | 178.51 | 619.86 | 294.89 | |
| u > 1017+32 # | 159 | 32 | 132 | 220.88 | 36 | 17 | 45 | 52 | 490.29 | 409.29 | 32 | 95 | 56 | 11 | 56 | 239.33 56 | 209 | 35 | 121 | 294.89 | |
| π | 139 | 52 | 152 | 233 | 50 | 17 | 45 | JZ | 42 | 14 | 52 | 33 | 50 | 11 | 50 | 50 | 209 | 55 | 121 | 245 | |
| Total # | 24422 | 24422 | 24422 | 24422 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | 24968 | |
| Average | -3.35 | -4.48 | -12.41 | -22.08 | -9.95 | 10.49 | -21.12 | -14.89 | -8.59 | 6.80 | -21.24 | -10.92 | -3.61 | 3.73 | -20.60 | -15.37 | 0.48 | -0.51 | -19.04 | -17.54 | |
| Std Dev | 63.05 | 89.14 | 70.52 | 113.50 | 15.54 | 22.11 | 27.52 | 46.90 | 25.25 | 33.29 | 17.92 | 52.83 | 37.66 | 46.58 | 24.07 | 55.35 | 76.70 | 87.07 | 57.48 | 78.18 | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | 02.00 | | | | | | | | | |
| | | L. Th | | | | L. In | | | | L. M | | 01.00 | | | | | | L. Li | ttle | | |
| No Finger Found | | | umb | | | | dex | | | | iddle | 01.00 | | L. R 6 | Ring | | | | | | |
| No Finger Found | L | L. Th | umb | В | L | L. In | dex | В | L | L. M | iddle | В | L | L. R | Ring | в | L | L. Li | | в | |
| No Finger Found MN <= d < 0 | L -13.68 | L. Th 12 | umb | | L -9.53 | L. In 56 | dex 5 | | L -11.40 | L. M 5 | iddle | | L -12.45 | L. R 6 | Ring | | L -11.80 | L. Li 84 | | | |
| | L | L. Th 12 R | umb 25 T | В | L | L. In 56 R | dex 5 T | В | L | L. M 5 R | iddle 7 T | В | L | L. R 6 R | Ring 1 T | В | L | L. Li 84 R | 4 T | в | |
| | L -13.68 | L. Th 12 R -5.85 | umb 25 T -20.02 | B -23.08 | L -9.53 | L. In 5(R -7.56 | dex 5 T -22.46 | B -21.33 | L -11.40 | L. M 5 R -6.78 | iddle 7 T -22.40 | B -21.66 | L -12.45 | L. R 6 R -6.81 | Ring 51 T -21.62 | B -21.66 | L -11.80 | L. Li 84 R -7.12 | 4 T -20.82 | B -20.34 | |
| MN <= d < 0 # | L -13.68 19696 | L. Th 12 R -5.85 6490 | umb 25 T -20.02 22867 | B -23.08 15923 | L -9.53 18224 | L. In 56 R -7.56 5700 | dex 5 -22.46 23581 | B -21.33 17998 | L -11.40 19867 | L. M 5 R -6.78 4621 | iddle 7 -22.40 23625 | B -21.66 13527 | L -12.45 20064 | L. R 6 R -6.81 2468 | Ring 51 -21.62 23082 | B -21.66 15304 | L -11.80 19217 | L. Li 84 R -7.12 2062 | 4 T -20.82 22520 | B -20.34 18276 | |
| MN <= d < 0 # 0 <= d <= MX | L -13.68 19696 11.22 | L. Th 12 R -5.85 6490 10.23 | umb 25 T -20.02 22867 7.69 | B -23.08 15923 33.84 | L -9.53 18224 5.62 | L. Inc 56 7.56 5700 10.62 | dex 5 -22.46 23581 4.66 | B -21.33 17998 17.89 | L -11.40 19867 5.73 | L. M 5 R -6.78 4621 11.55 | iddle 7 7 -22.40 23625 4.30 | B -21.66 13527 28.35 | L -12.45 20064 6.73 | L. R 6 R -6.81 2468 14.00 | Ring 51 -21.62 23082 4.05 | B -21.66 15304 27.01 | L -11.80 19217 7.90 | L. Li 84 R -7.12 2062 14.82 | 4 T -20.82 22520 4.36 | B -20.34 18276 17.90 | |
| MN <= d < 0 # 0 <= d <= MX | L -13.68 19696 11.22 | L. Th 12 R -5.85 6490 10.23 | umb 25 T -20.02 22867 7.69 | B -23.08 15923 33.84 | L -9.53 18224 5.62 | L. Inc 56 7.56 5700 10.62 | dex 5 -22.46 23581 4.66 | B -21.33 17998 17.89 | L -11.40 19867 5.73 | L. M 5 R -6.78 4621 11.55 | iddle 7 7 -22.40 23625 4.30 | B -21.66 13527 28.35 | L -12.45 20064 6.73 | L. R 6 R -6.81 2468 14.00 | Ring 51 -21.62 23082 4.05 | B -21.66 15304 27.01 | L -11.80 19217 7.90 | L. Li 84 R -7.12 2062 14.82 | 4 T -20.82 22520 4.36 | B -20.34 18276 17.90 | |
| MN <= d < 0 # 0 <= d <= MX # | L -13.68 19696 11.22 3978 | L. Th 12 R -5.85 6490 10.23 17677 | umb 25 T -20.02 22867 7.69 1308 | B -23.08 15923 33.84 6367 | L -9.53 18224 5.62 6632 | L. Inc 56 7.56 5700 10.62 19024 | dex 5 -22.46 23581 4.66 1250 | B -21.33 17998 17.89 6191 | L -11.40 19867 5.73 4941 | L. M 5 R -6.78 4621 11.55 20200 | iddle 7 7 -22.40 23625 4.30 1191 | B -21.66 13527 28.35 9785 | L -12.45 20064 6.73 4706 | L. R 6 R -6.81 2468 14.00 22350 | Ring 1 T -21.62 23082 4.05 1722 | B -21.66 15304 27.01 8173 | L -11.80 19217 7.90 5372 | L. Li 84 7.12 2062 14.82 22586 | 4 T -20.82 22520 4.36 1960 | B -20.34 18276 17.90 5659 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN | L -13.68 19696 11.22 3978 -38.08 | L. Th 12 R -5.85 6490 10.23 17677 | umb 25 T -20.02 22867 7.69 1308 -76.61 | B -23.08 15923 33.84 6367 -76.51 | L -9.53 18224 5.62 6632 -39.49 | L. Inc 56 7.56 5700 10.62 19024 | dex 5 -22.46 23581 4.66 1250 -77.12 | B -21.33 17998 17.89 6191 -78.36 | L -11.40 19867 5.73 4941 -37.67 | L. M 5 R -6.78 4621 11.55 20200 | iddle 7 -22.40 23625 4.30 1191 -74.64 | B -21.66 13527 28.35 9785 -78.30 | L -12.45 20064 6.73 4706 | L. R 6 R -6.81 2468 14.00 22350 -39.96 | Ring 1 -21.62 23082 4.05 1722 -77.73 | B -21.66 15304 27.01 8173 -77.83 544 140.18 | L -11.80 19217 7.90 5372 -39.25 | L. Li 84 -7.12 2062 14.82 22586 | 4 T -20.82 22520 4.36 1960 -79.32 | B -20.34 18276 17.90 5659 -75.70 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # | L -13.68 19696 11.22 3978 -38.08 494 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 | umb 5 7 22867 7.69 1308 -76.61 58 | B -23.08 15923 33.84 6367 -76.51 648 | L -9.53 18224 5.62 6632 -39.49 34 | L. Inc. 56 7.56 5700 10.62 19024 -38.45 153 | dex 5 -22.46 23581 4.66 1250 -77.12 38 | B -21.33 17998 17.89 6191 -78.36 330 | L -11.40 19867 5.73 4941 -37.67 75 | L. M 5 R 4621 11.55 20200 | iddle 7 -22.40 23625 4.30 1191 -74.64 51 | B -21.66 13527 28.35 9785 -78.30 572 | L -12.45 20064 6.73 4706 -37.83 114 | L. R 6 R -6.81 2468 14.00 22350 -39.96 45 | Ring 1 -21.62 23082 4.05 1722 -77.73 35 | B -21.66 15304 27.01 8173 -77.83 544 | L -11.80 19217 7.90 5372 -39.25 129 | L. Li 84 -7.12 2062 14.82 22586 | 4 T -20.82 22520 4.36 1960 -79.32 133 | B -20.34 18276 17.90 5659 -75.70 165 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 | L -13.68 19696 11.22 3978 -38.08 494 75.81 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 | umb 25 T -20.02 22867 7.69 1308 -76.61 58 81.31 8 | B -23.08 15923 33.84 6367 -76.51 648 143.41 | L -9.53 18224 5.62 6632 -39.49 34 77.75 | L. Inc. 56 7.56 5700 10.62 19024 -38.45 153 77.36 | dex 5 7 -22.46 23581 4.66 1250 -77.12 38 91.50 1 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 | L -11.40 19867 5.73 4941 -37.67 75 74.60 | L. M 5 R -6.78 4621 11.55 20200 -38.72 55 79.88 12 | iddle 7 -22.40 23625 4.30 1191 -74.64 51 80.33 6 | B -21.66 13527 28.35 9785 -78.30 572 141.69 | L -12.45 20064 6.73 4706 -37.83 114 72.50 | L. R 6 7 -6.81 2468 14.00 22350 -39.96 45 72.88 20 | Ring 1 T -21.62 23082 4.05 1722 -77.73 35 77.00 | B -21.66 15304 27.01 8173 -77.83 544 140.18 | L -11.80 19217 7.90 5372 -39.25 129 77.28 | L. Li 84 -7.12 2062 14.82 22586 -44.37 67 76.00 | 4 T -20.82 22520 4.36 1960 -79.32 133 79.00 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 | L -13.68 19696 11.22 3978 -38.08 494 75.81 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 | umb 25 T -20.02 22867 7.69 1308 -76.61 58 81.31 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 | L -9.53 18224 5.62 6632 -39.49 34 77.75 | L. Inc. 56 7.56 5700 10.62 19024 -38.45 153 77.36 11 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 | L -11.40 19867 5.73 4941 -37.67 75 74.60 | L. M 5 R -6.78 4621 11.55 20200 -38.72 55 79.88 12 | iddle 7 7 -22.40 23625 4.30 1191 -74.64 51 80.33 6 | B -21.66 13527 28.35 9785 -78.30 572 141.69 | L -12.45 20064 6.73 4706 -37.83 114 72.50 | L. R 6 R -6.81 2468 14.00 22350 -39.96 45 72.88 20 | Ring 1 T -21.62 23082 4.05 1722 -77.73 35 77.00 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 | L -11.80 19217 7.90 5372 -39.25 129 77.28 | L. Li 84 7.7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 | 4 T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 | B -20.34 18276 17.90 5659 -75.70 165 144.36 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 # d < MN-32 # | L -13.68 19696 11.22 3978 -38.08 494 75.81 60 -218.64 53 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 -623.07 154 | T -20.02 22867 7.69 1308 -76.61 58 81.31 8 -263.38 52 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 -384.05 666 | L -9.53 18224 5.62 6632 -39.49 34 77.75 4 200 -603.05 10 | L. Inc. 5700 10.62 19024 -38.45 153 77.36 11 -1061.69 64 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 29 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 -272.67 295 | L -11.40 19867 5.73 4941 -37.67 75 74.60 10 10 | L. M 5 R -6.78 4621 11.55 20200 -38.72 55 79.88 12 -891.26 65 | iddle 7 -22.40 23625 4.30 1191 -74.64 51 80.33 6 202.42 39 | B -21.66 13527 28.35 9785 -78.30 572 141.69 209 -194.51 745 | L -12.45 20064 6.73 4706 -37.83 114 72.50 7 -354.33 6 | L. R 6 R -6.81 2468 14.00 22350 -39.96 45 72.88 20 -599.00 72 | Ring T -21.62 23082 4.05 1722 -77.73 35 77.00 6 -228.01 51 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 -195.74 651 | L -11.80 19217 7.90 5372 -39.25 129 77.28 72 72 -259.54 75 | L. Li 84 7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 155 | 4 T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 230 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 -609.27 183 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 # d < MN-32 # d > MX+32 | L -13.68 19696 11.22 3978 -38.08 494 75.81 60 -218.64 53 357.87 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 -623.07 154 402.70 | T -20.02 22867 7.69 1308 -76.61 58 81.31 8 -263.38 52 890.92 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 -384.05 666 216.44 | L -9.53 18224 5.62 6632 -39.49 34 77.75 4 77.75 4 | L. Inc. 5700 10.62 19024 -38.45 153 77.36 11 -1061.69 64 612.92 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 29 399.14 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 -272.67 295 245.93 | L -11.40 19867 5.73 4941 -37.67 75 74.60 10 10 -524.17 9 723.71 | L. M 5 R -6.78 4621 11.55 20200 -38.72 55 79.88 12 -891.26 65 608.82 | iddle 7 7 23625 4.30 1191 -74.64 51 80.33 6 210 246.93 | B -21.66 13527 28.35 9785 -78.30 572 141.69 209 -194.51 745 228.48 | L -12.45 20064 6.73 4706 -37.83 114 72.50 7 -354.33 6 436.13 | L. R 6 7 2468 14.00 22350 -39.96 45 72.88 20 -599.00 72 393.17 | Ring T -21.62 23082 4.05 1722 -77.73 35 77.00 6 -228.01 51 329.21 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 -195.74 651 228.88 | L -11.80 19217 7.90 5372 -39.25 129 77.28 72 72 -259.54 75 165.68 | L. Li 84 7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 155 287.55 | 4 T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 230 637.85 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 -609.27 183 278.00 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 # d < MN-32 # | L -13.68 19696 11.22 3978 -38.08 494 75.81 60 -218.64 53 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 -623.07 154 | T -20.02 22867 7.69 1308 -76.61 58 81.31 8 -263.38 52 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 -384.05 666 | L -9.53 18224 5.62 6632 -39.49 34 77.75 4 200 -603.05 10 | L. Inc. 5700 10.62 19024 -38.45 153 77.36 11 -1061.69 64 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 29 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 -272.67 295 | L -11.40 19867 5.73 4941 -37.67 75 74.60 10 10 | L. M 5 R -6.78 4621 11.55 20200 -38.72 55 79.88 12 -891.26 65 | iddle 7 -22.40 23625 4.30 1191 -74.64 51 80.33 6 202.42 39 | B -21.66 13527 28.35 9785 -78.30 572 141.69 209 -194.51 745 | L -12.45 20064 6.73 4706 -37.83 114 72.50 7 -354.33 6 | L. R 6 R -6.81 2468 14.00 22350 -39.96 45 72.88 20 -599.00 72 | Ring T -21.62 23082 4.05 1722 -77.73 35 77.00 6 -228.01 51 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 -195.74 651 | L -11.80 19217 7.90 5372 -39.25 129 77.28 72 72 -259.54 75 | L. Li 84 7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 155 | 4 T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 230 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 -609.27 183 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 # d < MN-32 # d > MX+32 # | L -13.68 19696 11.22 3978 -38.08 494 75.81 60 -218.64 53 357.87 141 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 -623.07 154 402.70 35 | umb 5 T -20.02 22867 7.69 1308 -76.61 58 81.31 8 -263.38 52 890.92 129 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 -384.05 666 216.44 385 | L -9.53 18224 5.62 6632 -39.49 34 77.75 4 77.75 4 -603.05 10 935.99 60 | L. Inc. 5700 10.62 19024 -38.45 153 77.36 11 -1061.69 64 612.92 12 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 29 399.14 65 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 -272.67 295 245.93 84 | L -11.40 19867 5.73 4941 -37.67 75 74.60 10 -524.17 9 723.71 62 | L. M 5 R 4621 11.55 20200 -38.72 55 79.88 12 -891.26 65 608.82 11 | iddle 7 7 23625 4.30 1191 -74.64 51 80.33 6 202.42 39 246.93 52 | B -21.66 13527 28.35 9785 -78.30 572 141.69 209 -194.51 745 228.48 126 | L -12.45 20064 6.73 4706 -37.83 114 72.50 7 -354.33 6 436.13 67 | L R -6.81 2468 14.00 22350 -39.96 45 72.88 20 -599.00 72 393.17 9 | Ring T -21.62 23082 4.05 1722 -77.73 35 77.00 6 -228.01 51 329.21 68 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 -195.74 651 228.88 104 | L -11.80 19217 7.90 5372 -39.25 129 77.28 72 77.28 72 165.68 99 | L. Li 84 7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 155 287.55 82 | T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 230 637.85 115 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 -609.27 183 278.00 525 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 # d < MN-32 # d > MX+32 # Total # | L -13.68 19696 11.22 3978 -38.08 494 75.81 60 -218.64 53 357.87 141 24422 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 -623.07 154 402.70 35 | T -20.02 22867 7.69 1308 -76.61 58 81.31 8 -263.38 52 890.92 129 24422 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 -384.05 666 216.44 385 | L -9.53 18224 5.62 6632 -39.49 34 77.75 4 -603.05 10 935.99 60 | L. Ind 57 R -7.56 5700 10.62 19024 -38.45 153 77.36 11 -1061.69 64 612.92 12 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 29 399.14 65 24964 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 -272.67 295 245.93 84 | L -11.40 19867 5.73 4941 -37.67 75 74.60 10 -524.17 9 723.71 62 24964 | L. M 5 R -6.78 4621 11.55 20200 -38.72 55 79.88 12 -891.26 65 608.82 11 24964 | iddle 7 7 23625 4.30 1191 -74.64 51 80.33 6 -202.42 39 246.93 52 24964 | B -21.66 13527 28.35 9785 -78.30 572 141.69 209 -194.51 745 228.48 126 | L -12.45 20064 6.73 4706 -37.83 114 72.50 7 -354.33 6 436.13 67 24964 | L. R 6 R 2468 14.00 22350 -39.96 45 72.88 20 -599.00 72 393.17 9 24964 | Ring T -21.62 23082 4.05 1722 -77.73 35 77.00 6 -228.01 51 329.21 68 24964 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 -195.74 651 228.88 104 24964 | L -11.80 19217 7.90 5372 -39.25 129 77.28 72 -259.54 75 165.68 99 24964 | L. Li 84 7.7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 155 287.55 82 24964 | T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 230 637.85 115 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 -609.27 183 278.00 525 24964 | |
| MN <= d < 0 # 0 <= d <= MX # MN-32 <= d < MN # MX < d <= MX+32 # d < MN-32 # d > MX+32 # | L -13.68 19696 11.22 3978 -38.08 494 75.81 60 -218.64 53 357.87 141 | L. Th 12 R -5.85 6490 10.23 17677 -45.97 29 77.03 37 -623.07 154 402.70 35 | umb 5 T -20.02 22867 7.69 1308 -76.61 58 81.31 8 -263.38 52 890.92 129 | B -23.08 15923 33.84 6367 -76.51 648 143.41 433 -384.05 666 216.44 385 | L -9.53 18224 5.62 6632 -39.49 34 77.75 4 77.75 4 -603.05 10 935.99 60 | L. Inc. 5700 10.62 19024 -38.45 153 77.36 11 -1061.69 64 612.92 12 | dex T -22.46 23581 4.66 1250 -77.12 38 91.50 1 -260.97 29 399.14 65 | B -21.33 17998 17.89 6191 -78.36 330 143.15 66 -272.67 295 245.93 84 | L -11.40 19867 5.73 4941 -37.67 75 74.60 10 -524.17 9 723.71 62 | L. M 5 R 4621 11.55 20200 -38.72 55 79.88 12 -891.26 65 608.82 11 | iddle 7 7 23625 4.30 1191 -74.64 51 80.33 6 202.42 39 246.93 52 | B -21.66 13527 28.35 9785 -78.30 572 141.69 209 -194.51 745 228.48 126 | L -12.45 20064 6.73 4706 -37.83 114 72.50 7 -354.33 6 436.13 67 | L R -6.81 2468 14.00 22350 -39.96 45 72.88 20 -599.00 72 393.17 9 | Ring T -21.62 23082 4.05 1722 -77.73 35 77.00 6 -228.01 51 329.21 68 | B -21.66 15304 27.01 8173 -77.83 544 140.18 188 -195.74 651 228.88 104 | L -11.80 19217 7.90 5372 -39.25 129 77.28 72 77.28 72 165.68 99 | L. Li 84 7.12 2062 14.82 22586 -44.37 67 76.00 12 -214.87 155 287.55 82 | T -20.82 22520 4.36 1960 -79.32 133 79.00 6 -356.90 230 637.85 115 | B -20.34 18276 17.90 5659 -75.70 165 144.36 156 -609.27 183 278.00 525 | |

Appendix D. Plots of 3-inch segmentation box centers.

The plots in this appendix show the distribution of the segmentation box centers (x,y) for the 3-inch data. There is a combined plot for each slap image and then a smaller plot for each finger position. The individual finger plots are better for seeing the full "spread" of x,y positions detected. The plot for the ground truth (GT) is included as a baseline for comparison. The blank lines that appear in some of the plots are most likely caused by the segmentation algorithm doing some level of sampling of the input image. The reason the lines are not evenly distributed in some plots is an artifact of the sampling when scaling the images for displaying in the report.

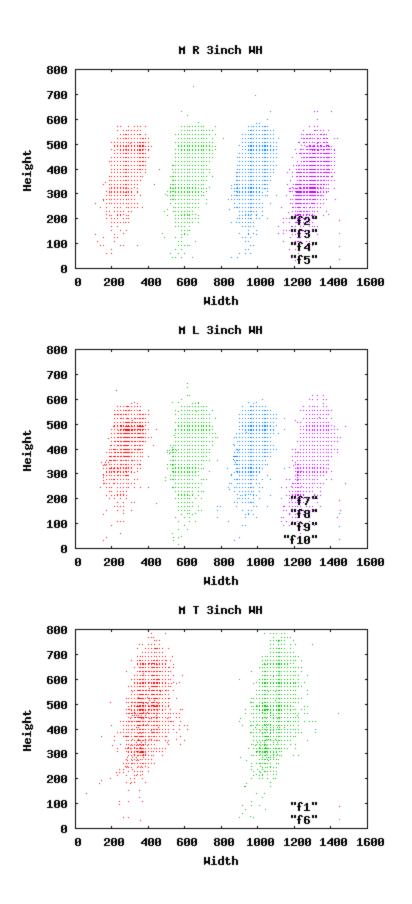






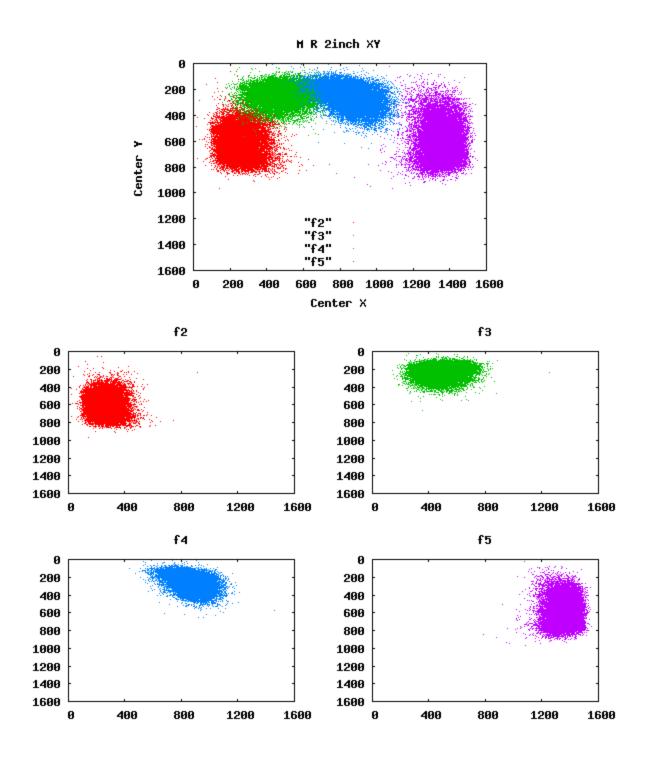
Appendix E. Plots of 3-inch segmentation box widths and heights.

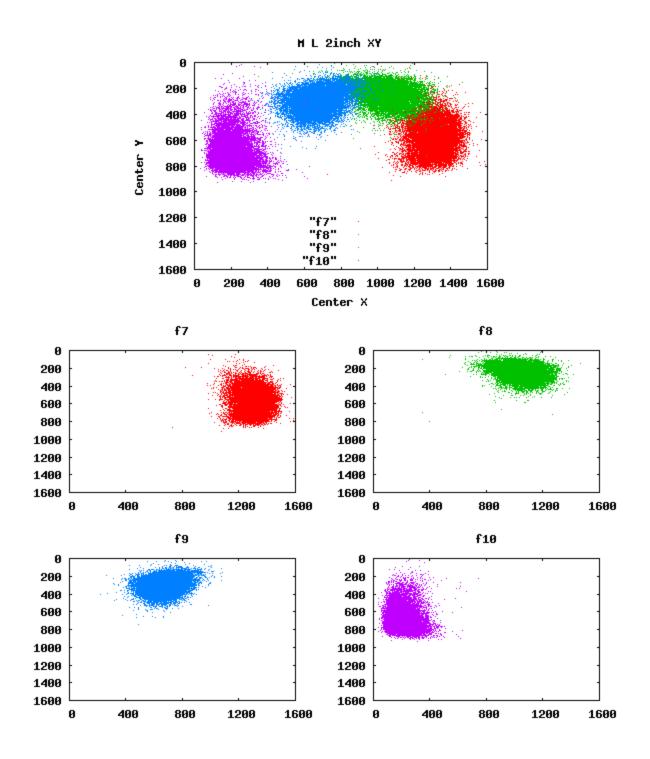
The plots in this appendix show the distribution of the segmentation box widths and heights for the 3-inch data. There is a combined plot for each slap image and then a smaller plot for each finger position. The individual finger plots are better for seeing the full "spread" of widths and heights detected. The widths are "spread out" on the plot by adding 350, 750 and 1050 to the 2nd, 3rd, and 4th widths plotted. The plot for the ground truth (GT) is included as a baseline for comparison. The blank lines that appear in some of the plots are most likely caused by the segmentation algorithm doing some level of sampling of the input image. The reason the lines are not evenly distributed in some plots is an artifact of the sampling when scaling the images for displaying in the report.



Appendix F. Plots of 2-inch segmentation box centers.

The plots in this appendix show the distribution of the segmentation box centers (x,y) for the 2-inch data. There is a combined plot for each slap image and then a smaller plot for each finger position. The individual finger plots are better for seeing the full "spread" of x,y positions detected. The plot for the ground truth (GT) is included as a baseline for comparison. The blank lines that appear in some of the plots are most likely caused by the segmentation algorithm doing some level of sampling of the input image. The reason the lines are not evenly distributed in some plots is an artifact of the sampling when scaling the images for displaying in the report.





Appendix G. Plots of 2-inch segmentation box widths and heights.

The plots in this appendix show the distribution of the segmentation box widths and heights for the 2-inch data. There is a combined plot for each slap image and then a smaller plot for each finger position. The individual finger plots are better for seeing the full "spread" of widths and heights detected. The widths are "spread out" on the plot by adding 350, 750 and 1050 to the 2nd, 3rd, and 4th widths plotted. The plot for the ground truth (GT) is included as a baseline for comparison. The blank lines that appear in some of the plots are most likely caused by the segmentation algorithm doing some level of sampling of the input image. The reason the lines are not evenly distributed in some plots is an artifact of the sampling when scaling the images for displaying in the report.

