**Laporan**

**Tugas Besar - Pengolahan Citra Digital**

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| **NPM** | **:** | **5200411416** |

**Penjelasan Algoritma Ekstraksi Area Region of Interest (ROI)**

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| Area Roi diperoleh dengan mencari titik tengah dari citra menggunakan rumus:  Setelah mendapatkan titik tengah pada citra, kemudian Xtengah dan Ytengah masing-masing akan dikurangi sebanyak 35 pixels untuk mendapatkan titik 0,0 ROI. Lalu pada Xtengah dan Ytengah masing-masing akan dikurangi 26 pixels sehingga area yang didapat adalah sebesar 9x9 pixels seperti ilustrasi berikut    Sedangkan untuk pengambilan titik 0,0 ROI dan area ROI pada citra mobil tampak belakang menggunakan rumus:  Rumus ini saya dapatkan setelah saya tidak sengaja membalik Xtengah dan Ytengah saat sedang mencoba meng-crop citra dari code berikut  res = img[sumbuX-15:sumbuX-6,sumbuY-15:sumbuY-6]  yang seharusnya pada img[] diisikan sumbuY terlebih dahulu namun malah saya ketik sumbuX terlebih dahulu, namun karena menghasilkan area ROI yang bagus jadi saya menggunakan rumus ini.  Setelah mendapatkan titik X dan Y pada citra, kemudian X dan Y masing-masing akan dikurangi sebanyak 15 pixels untuk mendapatkan titik 0,0 ROI. Lalu pada X dan Ymasing-masing akan dikurangi 6 pixels sehingga area yang didapat adalah sebesar 9x9 pixels seperti ilustrasi berikut |

**Kode Program**

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| Kode program untuk mendapatkan ROI bagian Depan adalah sebagai berikut:   |  | | --- | | Copy-paste-kan kode program anda di sini  import os  import xlsxwriter as excel  import cv2 as cv  dir\_name = 'Img/Front'  workbook = excel.Workbook('front.xlsx')  worksheet = workbook.add\_worksheet()  worksheet.set\_default\_row(180)  worksheet.set\_column\_pixels('A1:A100', 264)  worksheet.set\_column\_pixels('B1:B100', 180)  def cropImage(path):    img = cv.imread(path, cv.IMREAD\_UNCHANGED)    sumbuX, sumbuY = int(img.shape[1]/2), int(img.shape[0]/2)    save = 'roi/Front/'+foldername+'/'+str(count).zfill(2)+'\_roi\_front\_'+foldername+'.jpg'    res = img[sumbuY-35:sumbuY-26,sumbuX-35:sumbuX-26]    cv.imwrite(save, res)  def tandaImage(path):    img = cv.imread(path, cv.COLOR\_BGR2RGB)    sumbuX, sumbuY = int(img.shape[1]/2), int(img.shape[0]/2)    save = 'bb/Front/'+foldername+'/'+str(count).zfill(2)+'\_bb\_front\_'+foldername+'.jpg'    start\_point = (sumbuX-35, sumbuY-35)    end\_point = (sumbuX-26, sumbuY-26)    color = (255, 0, 0)    res = cv.rectangle(img, start\_point, end\_point, color, thickness=2)    cv.imwrite(save, res)  count=0  for foldername in os.listdir(dir\_name):    for filename in os.listdir(dir\_name + '/' + foldername):      if os.path.isfile(dir\_name + '/' + foldername + '/' + filename):        img = dir\_name +'/' + foldername + '/' + filename        dataset = 'dataset/Front/'+foldername+'/'+str(count).zfill(2)+'\_front\_'+foldername+'.jpg'        cv.imwrite(dataset, cv.imread(img, cv.IMREAD\_UNCHANGED))        cropImage(img)        crop = 'roi/Front/'+foldername+'/'+str(count).zfill(2)+'\_roi\_front\_'+foldername+'.jpg'        tandaImage(img)        tanda = 'bb/Front/'+foldername+'/'+str(count).zfill(2)+'\_bb\_front\_'+foldername+'.jpg'        worksheet.insert\_image(count, 0, tanda, {'x\_scale': 0.3, 'y\_scale': 0.3, 'positioning':0})        worksheet.insert\_image(count, 1, crop, {'x\_scale': 10, 'y\_scale': 10, 'positioning':0})        count+=1  workbook.close() |   Kode program untuk mendapatkan ROI bagian Belakang adalah sebagai berikut:   |  | | --- | | Copy-paste-kan kode program anda di sini  import os  import xlsxwriter as excel  import cv2 as cv  dir\_name = 'Img/Back'  workbook = excel.Workbook('back.xlsx')  worksheet = workbook.add\_worksheet()  worksheet.set\_default\_row(180)  worksheet.set\_column\_pixels('A1:A100', 264)  worksheet.set\_column\_pixels('B1:B100', 180)  def cropImage(path):    img = cv.imread(path, cv.IMREAD\_UNCHANGED)    sumbuX, sumbuY = int(img.shape[1]/2), int(img.shape[0]/2)    save = 'roi/Back/'+foldername+'/'+str(count).zfill(2)+'\_roi\_back\_'+foldername.replace('-Back', '')+'.jpg'    res = img[sumbuX-15:sumbuX-6,sumbuY-15:sumbuY-6]    cv.imwrite(save, res)  def tandaImage(path):    img = cv.imread(path, cv.COLOR\_BGR2RGB)    sumbuX, sumbuY = int(img.shape[1]/2), int(img.shape[0]/2)    save = 'bb/Back/'+foldername+'/'+str(count).zfill(2)+'\_bb\_back\_'+foldername.replace('-Back', '')+'.jpg'    start\_point = (sumbuY-15, sumbuX-15)    end\_point = (sumbuY-6, sumbuX-6)    color = (255, 0, 0)    res = cv.rectangle(img, start\_point, end\_point, color, thickness=2)    cv.imwrite(save, res)  count=42  for foldername in os.listdir(dir\_name):    for filename in os.listdir(dir\_name + '/' + foldername):      if os.path.isfile(dir\_name + '/' + foldername + '/' + filename):        img = dir\_name +'/' + foldername + '/' + filename        dataset = 'dataset/Back/'+foldername+'/'+str(count).zfill(2)+'\_back\_'+foldername.replace('-Back', '')+'.jpg'        cv.imwrite(dataset, cv.imread(img, cv.IMREAD\_UNCHANGED))        cropImage(img)        crop = 'roi/Back/'+foldername+'/'+str(count).zfill(2)+'\_roi\_back\_'+foldername.replace('-Back', '')+'.jpg'        tandaImage(img)        tanda = 'bb/Back/'+foldername+'/'+str(count).zfill(2)+'\_bb\_back\_'+foldername.replace('-Back', '')+'.jpg'        worksheet.insert\_image(count, 0, tanda, {'x\_scale': 0.3, 'y\_scale': 0.3, 'positioning':0})        worksheet.insert\_image(count, 1, crop, {'x\_scale': 10, 'y\_scale': 10, 'positioning':0})        count+=1  workbook.close() | |

**Hasil Running Program untuk Proses Ekstraksi ROI**

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| --- | --- | --- | --- |
| **No.** | **Citra** | **Roi** | **Keterangan** |
| 1. | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000000776618_d6801a2b_4a83_4ee2_86e5_d8f614ba7ec3.png | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000000776618_d6801a2b_4a83_4ee2_86e5_d8f614ba7ec3.png | **Sangat Baik** |
| 2. | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000001304148_ebe40002_517f_401c_95ff_fd25ede1e60e.png | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000001304148_ebe40002_517f_401c_95ff_fd25ede1e60e.png | **Sangat Baik** |
| 3. | gallery_used-car-mobil123-honda-jazz-rs-hatchback-indonesia_000002548238_6ed1f305_7522_46b4_a251_f557b01244e5.png | gallery_used-car-mobil123-honda-jazz-rs-hatchback-indonesia_000002548238_6ed1f305_7522_46b4_a251_f557b01244e5.png | **Sangat Baik** |
| 4. | gallery_used-car-mobil123-porsche-718-cayman-coupe-indonesia_000007290548_90f7793c_8650_4c3e_a902_0f3516150c28.png | gallery_used-car-mobil123-porsche-718-cayman-coupe-indonesia_000007290548_90f7793c_8650_4c3e_a902_0f3516150c28.png | **Sangat Baik** |
| 5. | gallery_used-car-mobil123-proton-neo-r3-hatchback-indonesia_000009754728_cfb89de3_8b5c_4aef_93a1_50ddc15b951d.png | gallery_used-car-mobil123-proton-neo-r3-hatchback-indonesia_000009754728_cfb89de3_8b5c_4aef_93a1_50ddc15b951d.png | **Tidak Baik** |
| 6. | gallery_used-car-mobil123-toyota-agya-trd-hatchback-indonesia_000000345538_a97f5a00_a06d_44ac_afb4_e02369e06110.png | gallery_used-car-mobil123-toyota-agya-trd-hatchback-indonesia_000000345538_a97f5a00_a06d_44ac_afb4_e02369e06110.png | **Sangat Baik** |
| 7. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000001424428_eded2ac4_8b9a_4f59_84f2_751e9661b5f6.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000001424428_eded2ac4_8b9a_4f59_84f2_751e9661b5f6.png | **Sangat Baik** |
| 8. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000005844248_beb73867_6d81_420e_a1ef_63055b5b8e1e.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000005844248_beb73867_6d81_420e_a1ef_63055b5b8e1e.png | **Sangat Baik** |
| 9. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000008165797_f000cd9b_30a1_4e6b_a62f_b1cdd181f024.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000008165797_f000cd9b_30a1_4e6b_a62f_b1cdd181f024.png | **Sangat Baik** |
| 10. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000009444918_cfd89ee0_0b24_4389_bde7_8d8a417a9c39.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000009444918_cfd89ee0_0b24_4389_bde7_8d8a417a9c39.png | **Sangat Baik** |
| 11. | gallery_used-car-mobil123-honda-cr-v-prestige-prestige-vtec-suv-indonesia_000004612648_8b68aea2_4df3_4e4a_885c_0526d2288226.png | gallery_used-car-mobil123-honda-cr-v-prestige-prestige-vtec-suv-indonesia_000004612648_8b68aea2_4df3_4e4a_885c_0526d2288226.png | **Sangat Baik** |
| 12. | gallery_used-car-mobil123-honda-jazz-s-hatchback-indonesia_000007167028_3fcb1ee8_9430_4681_b24c_7f5f0a6656fc.png | gallery_used-car-mobil123-honda-jazz-s-hatchback-indonesia_000007167028_3fcb1ee8_9430_4681_b24c_7f5f0a6656fc.png | **Sangat Baik** |
| 13. | gallery_used-car-mobil123-hyundai-santa-fe-limited-edition-suv-indonesia_000009609348_a48eab49_e4e1_4ff2_8a6c_85a23822a496.png | gallery_used-car-mobil123-hyundai-santa-fe-limited-edition-suv-indonesia_000009609348_a48eab49_e4e1_4ff2_8a6c_85a23822a496.png | **Kurang Optimal** |
| 14. | gallery_used-car-mobil123-mazda-2-gt-hatchback-indonesia_000002393628_4f65e040_9376_43d1_9093_5db84c28fb25.png | gallery_used-car-mobil123-mazda-2-gt-hatchback-indonesia_000002393628_4f65e040_9376_43d1_9093_5db84c28fb25.png | **Sangat Baik** |
| 15. | gallery_used-car-mobil123-mazda-6-skyactiv-g-wagon-indonesia_000008547138_f63a3ffa_35a1_4e8e_bc29_5cbb5c1fb2e0.png | gallery_used-car-mobil123-mazda-6-skyactiv-g-wagon-indonesia_000008547138_f63a3ffa_35a1_4e8e_bc29_5cbb5c1fb2e0.png | **Sangat Baik** |
| 16. | gallery_used-car-mobil123-mazda-cx-5-gt-suv-indonesia_000001707838_cf96d12f_254f_444e_9067_4a7ae0128872.png | gallery_used-car-mobil123-mazda-cx-5-gt-suv-indonesia_000001707838_cf96d12f_254f_444e_9067_4a7ae0128872.png | **Sangat Baik** |
| 17. | gallery_used-car-mobil123-mini-cooper-s-hatchback-indonesia_000005001148_b92f8572_5a10_4b20_aa23_4ead319ecec0.png | gallery_used-car-mobil123-mini-cooper-s-hatchback-indonesia_000005001148_b92f8572_5a10_4b20_aa23_4ead319ecec0.png | **Kurang Optimal** |
| 18. | gallery_used-car-mobil123-mitsubishi-mirage-exceed-hatchback-indonesia_000001443708_099ba336_0291_4ae8_86c8_1c47949c58cc.png | gallery_used-car-mobil123-mitsubishi-mirage-exceed-hatchback-indonesia_000001443708_099ba336_0291_4ae8_86c8_1c47949c58cc.png | **Sangat Baik** |
| 19. | gallery_used-car-mobil123-porsche-911-carrera-s-coupe-indonesia_000000252248_4cfe3726_6d77_4524_811e_a400db52c70c.png | gallery_used-car-mobil123-porsche-911-carrera-s-coupe-indonesia_000000252248_4cfe3726_6d77_4524_811e_a400db52c70c.png | **Sangat Baik** |
| 20. | gallery_used-car-mobil123-toyota-avanza-veloz-mpv-indonesia_000009515548_d6993336_86bd_4f62_a89c_057a6da70517.png | gallery_used-car-mobil123-toyota-avanza-veloz-mpv-indonesia_000009515548_d6993336_86bd_4f62_a89c_057a6da70517.png | **Sangat Baik** |
| 21. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000001413328_87dfbabd_affc_4406_b12d_f8f2b9efdf1d.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000001413328_87dfbabd_affc_4406_b12d_f8f2b9efdf1d.png | **Sangat Baik** |
| 22. | gallery_used-car-mobil123-bmw-3-series-320i-luxury-sedan-indonesia_000004716238_f1539b21_502d_4740_bb07_835eae345536.png | gallery_used-car-mobil123-bmw-3-series-320i-luxury-sedan-indonesia_000004716238_f1539b21_502d_4740_bb07_835eae345536.png | **Tidak Baik** |
| 23. | gallery_used-car-mobil123-ferrari-california-california-convertible-indonesia_000003730247_7d9fe3f3_5037_4c6d_b409_c352432b2249.png | gallery_used-car-mobil123-ferrari-california-california-convertible-indonesia_000003730247_7d9fe3f3_5037_4c6d_b409_c352432b2249.png | **Kurang Optimal** |
| 24. | gallery_used-car-mobil123-honda-civic-e-hatchback-indonesia_000000328548_84283165_6453_4b5d_a260_3aacdcd3ab20.png | gallery_used-car-mobil123-honda-civic-e-hatchback-indonesia_000000328548_84283165_6453_4b5d_a260_3aacdcd3ab20.png | **Tidak Baik** |
| 25. | gallery_used-car-mobil123-honda-civic-e-hatchback-indonesia_000008632048_017162da_a9d4_4798_aae5_3f96930a9a98.png | gallery_used-car-mobil123-honda-civic-e-hatchback-indonesia_000008632048_017162da_a9d4_4798_aae5_3f96930a9a98.png | **Sangat Baik** |
| 26. | gallery_used-car-mobil123-honda-hr-v-e-suv-indonesia_000004002797_b5fffd35_1eec_4da2_bef2_9764cedc7294.png | gallery_used-car-mobil123-honda-hr-v-e-suv-indonesia_000004002797_b5fffd35_1eec_4da2_bef2_9764cedc7294.png | **Sangat Baik** |
| 27. | gallery_used-car-mobil123-honda-hr-v-prestige-suv-indonesia_000009613448_7f7cee5c_5413_4336_91f0_cdf4c4f48f26.png | gallery_used-car-mobil123-honda-hr-v-prestige-suv-indonesia_000009613448_7f7cee5c_5413_4336_91f0_cdf4c4f48f26.png | **Sangat Baik** |
| 28. | gallery_used-car-mobil123-jeep-wrangler-rubicon-suv-indonesia_000008046048_38dfbdce_303f_42cd_b36c_67e9b86972b3.png | gallery_used-car-mobil123-jeep-wrangler-rubicon-suv-indonesia_000008046048_38dfbdce_303f_42cd_b36c_67e9b86972b3.png | **Tidak Baik** |
| 29. | gallery_used-car-mobil123-mercedes-benz-cla-class-cla200-sport-coupe-indonesia_000003045528_1aa3ab70_505d_432f_8d1a_81775f7a8d25.png | gallery_used-car-mobil123-mercedes-benz-cla-class-cla200-sport-coupe-indonesia_000003045528_1aa3ab70_505d_432f_8d1a_81775f7a8d25.png | **Sangat Baik** |
| 30. | gallery_used-car-mobil123-mercedes-benz-gla-class-gla200-amg-suv-indonesia_000005914248_8c1b6bfd_6cc0_4956_adab_3afc5f3a99b2.png | gallery_used-car-mobil123-mercedes-benz-gla-class-gla200-amg-suv-indonesia_000005914248_8c1b6bfd_6cc0_4956_adab_3afc5f3a99b2.png | **Sangat Baik** |
| 31. | gallery_used-car-mobil123-toyota-mr-2-1.8-manual-convertibles-roadsters-indonesia_000003237247_0ba517a9_289e_4be3_a12e_240f62ef4a9e.png | gallery_used-car-mobil123-toyota-mr-2-1.8-manual-convertibles-roadsters-indonesia_000003237247_0ba517a9_289e_4be3_a12e_240f62ef4a9e.png | **Sangat Baik** |
| 32. | gallery_used-car-mobil123-ud-trucks-kuzer-rke-150-trucks-indonesia_000001542518_fb5b494b_68c5_45ad_ab53_7d6ac4d70dcb.png | gallery_used-car-mobil123-ud-trucks-kuzer-rke-150-trucks-indonesia_000001542518_fb5b494b_68c5_45ad_ab53_7d6ac4d70dcb.png | **Sangat Baik** |
| 33. | gallery_used-car-carmudi-honda-jazz-rs-hatchback-indonesia_000006612548_64d66202_88d8_42a4_a1ed_0f2a0c13f137.png | gallery_used-car-carmudi-honda-jazz-rs-hatchback-indonesia_000006612548_64d66202_88d8_42a4_a1ed_0f2a0c13f137.png | **Sangat Baik** |
| 34. | gallery_used-car-mobil123-aston-martin-v8-vantage-n420-coupe-indonesia_000006156128_ea82be1d_a612_4b88_99eb_dddf5a7d8b86.png | gallery_used-car-mobil123-aston-martin-v8-vantage-n420-coupe-indonesia_000006156128_ea82be1d_a612_4b88_99eb_dddf5a7d8b86.png | **Tidak Baik** |
| 35. | gallery_used-car-mobil123-jeep-wrangler-sport-x-suv-indonesia_000005636428_b7a05f80_9484_4165_a330_e6d0938a15d0.png | gallery_used-car-mobil123-jeep-wrangler-sport-x-suv-indonesia_000005636428_b7a05f80_9484_4165_a330_e6d0938a15d0.png | **Sangat Baik** |
| 36. | gallery_used-car-mobil123-jeep-wrangler-unlimited-70th-anniversary-edition-suv-indonesia_000008461487_f4f9ef87_6cf9_470a_8f2b_e60630c66148.png | gallery_used-car-mobil123-jeep-wrangler-unlimited-70th-anniversary-edition-suv-indonesia_000008461487_f4f9ef87_6cf9_470a_8f2b_e60630c66148.png | **Tidak Baik** |
| 37. | gallery_used-car-mobil123-lamborghini-gallardo-lp550-2-coupe-indonesia_000008851487_8badd0ee_ce3f_4f66_9936_8b373d53aff5.png | gallery_used-car-mobil123-lamborghini-gallardo-lp550-2-coupe-indonesia_000008851487_8badd0ee_ce3f_4f66_9936_8b373d53aff5.png | **Sangat Baik** |
| 38. | gallery_used-car-mobil123-land-rover-range-rover-evoque-si4-se-plus-suv-indonesia_000008135167_59aab243_ebdd_4b20_8e7b_18fb46d11ddf.png | gallery_used-car-mobil123-land-rover-range-rover-evoque-si4-se-plus-suv-indonesia_000008135167_59aab243_ebdd_4b20_8e7b_18fb46d11ddf.png | **Sangat Baik** |
| 39. | gallery_used-car-mobil123-mclaren-mp4-12c-coupe-coupe-indonesia_000000521208_f84bd072_237f_4965_9765_8960f30afb70.png | gallery_used-car-mobil123-mclaren-mp4-12c-coupe-coupe-indonesia_000000521208_f84bd072_237f_4965_9765_8960f30afb70.png | **Sangat Baik** |
| 40. | gallery_used-car-mobil123-mitsubishi-fuso-fm-517-hl-trucks-indonesia_000005807538_33c00b4c_0530_4fc2_b6fe_6d69906b6fa7.png | gallery_used-car-mobil123-mitsubishi-fuso-fm-517-hl-trucks-indonesia_000005807538_33c00b4c_0530_4fc2_b6fe_6d69906b6fa7.png | **Sangat Baik** |
| 41. | gallery_used-car-mobil123-toyota-sienta-g-mpv-indonesia_000000907548_2fb63112_be4d_47cc_adbf_37d2c202a53e.png | gallery_used-car-mobil123-toyota-sienta-g-mpv-indonesia_000000907548_2fb63112_be4d_47cc_adbf_37d2c202a53e.png | **Tidak Baik** |
| 42. | gallery_used-car-mobil123-volkswagen-beetle-coupe-indonesia_000008660228_6f2a18d3_7978_4b44_8dc0_a150b5beb8f6.png | gallery_used-car-mobil123-volkswagen-beetle-coupe-indonesia_000008660228_6f2a18d3_7978_4b44_8dc0_a150b5beb8f6.png | **Sangat Baik** |

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| --- | --- | --- | --- |
| 43. | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000001304148_df8733a8_ce2d_405d_8f82_24422cfc1026.png | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000001304148_df8733a8_ce2d_405d_8f82_24422cfc1026.png | **Sangat Baik** |
| 44. | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000004125748_55460e70_e878_465d_88a8_2611840caa17.png | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000004125748_55460e70_e878_465d_88a8_2611840caa17.png | **Tidak Baik** |
| 45. | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000006401548_b66371fc_6884_43e3_95ad_ee7d82c33fb4.png | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000006401548_b66371fc_6884_43e3_95ad_ee7d82c33fb4.png | **Sangat Baik** |
| 46. | gallery_used-car-mobil123-mercedes-benz-cla-class-cla200-amg-line-coupe-indonesia_000007676848_c5a676a5_170a_42a5_ab5e_a13b44838690.png | gallery_used-car-mobil123-mercedes-benz-cla-class-cla200-amg-line-coupe-indonesia_000007676848_c5a676a5_170a_42a5_ab5e_a13b44838690.png | **Sangat Baik** |
| 47. | gallery_used-car-mobil123-porsche-718-cayman-coupe-indonesia_000001990548_f91812fb_bbc4_4d5e_a423_9742b50ad4f9.png | gallery_used-car-mobil123-porsche-718-cayman-coupe-indonesia_000001990548_f91812fb_bbc4_4d5e_a423_9742b50ad4f9.png | **Tidak Baik** |
| 48. | gallery_used-car-mobil123-porsche-911-carrera-s-coupe-indonesia_000007403608_e4d74ebf_0c3d_4dec_867b_1c97807241ab.png | gallery_used-car-mobil123-porsche-911-carrera-s-coupe-indonesia_000007403608_e4d74ebf_0c3d_4dec_867b_1c97807241ab.png | **Sangat Baik** |
| 49. | gallery_used-car-mobil123-toyota-agya-trd-hatchback-indonesia_000006721948_c093af45_bdec_4f5d_bb31_41b3f57f0b02.png | gallery_used-car-mobil123-toyota-agya-trd-hatchback-indonesia_000006721948_c093af45_bdec_4f5d_bb31_41b3f57f0b02.png | **Sangat Baik** |
| 50. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000008599128_3a6d70b8_9a9f_4c5a_9d2b_e683d26ad3f7.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000008599128_3a6d70b8_9a9f_4c5a_9d2b_e683d26ad3f7.png | **Sangat Baik** |
| 51. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000008841548_b7732f2e_e0b4_48a3_a56e_70b810b053b8.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000008841548_b7732f2e_e0b4_48a3_a56e_70b810b053b8.png | **Tidak Baik** |
| 52. | gallery_used-car-mobil123-volkswagen-the-beetle-tsi-coupe-indonesia_000002038748_e904227f_eb42_4b03_8de9_38ccc9ade5b2.png | gallery_used-car-mobil123-volkswagen-the-beetle-tsi-coupe-indonesia_000002038748_e904227f_eb42_4b03_8de9_38ccc9ade5b2.png | **Tidak Baik** |
| 53. | gallery_used-car-carmudi-toyota-c-hr-wagon-indonesia_000005525848_c71896b9_0ee2_4ccd_9fbf_4339c7c24215.png | gallery_used-car-carmudi-toyota-c-hr-wagon-indonesia_000005525848_c71896b9_0ee2_4ccd_9fbf_4339c7c24215.png | **Sangat Baik** |
| 54. | gallery_used-car-mobil123-honda-cr-v-prestige-prestige-vtec-suv-indonesia_000004612648_c9bb8dfc_1027_4ebd_a9c8_c7b56a332acd.png | gallery_used-car-mobil123-honda-cr-v-prestige-prestige-vtec-suv-indonesia_000004612648_c9bb8dfc_1027_4ebd_a9c8_c7b56a332acd.png | **Tidak Baik** |
| 55. | gallery_used-car-mobil123-hyundai-santa-fe-limited-edition-suv-indonesia_000009609348_8bc8b4e9_8565_4eac_8d50_53784c332a25.png | gallery_used-car-mobil123-hyundai-santa-fe-limited-edition-suv-indonesia_000009609348_8bc8b4e9_8565_4eac_8d50_53784c332a25.png | **Tidak Baik** |
| 56. | gallery_used-car-mobil123-mazda-3-skyactiv-g-hatchback-indonesia_000004743848_f497639b_3ec3_48a9_a947_3a9c1c80eb4c.png | gallery_used-car-mobil123-mazda-3-skyactiv-g-hatchback-indonesia_000004743848_f497639b_3ec3_48a9_a947_3a9c1c80eb4c.png | **Sangat Baik** |
| 57. | gallery_used-car-mobil123-mazda-6-skyactiv-g-wagon-indonesia_000008547138_78b6fc90_7602_48ba_90ca_de5c69b7a09b.png | gallery_used-car-mobil123-mazda-6-skyactiv-g-wagon-indonesia_000008547138_78b6fc90_7602_48ba_90ca_de5c69b7a09b.png | **Sangat Baik** |
| 58. | gallery_used-car-mobil123-mazda-cx-5-elite-suv-indonesia_000008290138_b963510c_476f_4097_bf77_9b8ed3062f1f.png | gallery_used-car-mobil123-mazda-cx-5-elite-suv-indonesia_000008290138_b963510c_476f_4097_bf77_9b8ed3062f1f.png | **Sangat Baik** |
| 59. | gallery_used-car-mobil123-mazda-cx-5-gt-suv-indonesia_000001707838_9d85b2ce_a1f1_4b07_a569_228cf88bdf44.png | gallery_used-car-mobil123-mazda-cx-5-gt-suv-indonesia_000001707838_9d85b2ce_a1f1_4b07_a569_228cf88bdf44.png | **Tidak baik** |
| 60. | gallery_used-car-mobil123-mini-cooper-s-hatchback-indonesia_000009507048_820b3564_f28f_4355_8f2f_516ee15fb505.png | gallery_used-car-mobil123-mini-cooper-s-hatchback-indonesia_000009507048_820b3564_f28f_4355_8f2f_516ee15fb505.png | **Sangat Baik** |
| 61. | gallery_used-car-mobil123-mitsubishi-mirage-exceed-hatchback-indonesia_000001443708_34770499_65f1_4010_aaef_2e0cfb1d0904.png | gallery_used-car-mobil123-mitsubishi-mirage-exceed-hatchback-indonesia_000001443708_34770499_65f1_4010_aaef_2e0cfb1d0904.png | **Sangat Baik** |
| 62. | gallery_used-car-mobil123-toyota-avanza-veloz-mpv-indonesia_000009515548_fecbab98_8dd2_4507_98ce_539850775e62.png | gallery_used-car-mobil123-toyota-avanza-veloz-mpv-indonesia_000009515548_fecbab98_8dd2_4507_98ce_539850775e62.png | **Tidak Baik** |
| 63. | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000001126848_f9aec2af_013a_4080_abf2_3d2d44882a89.png | gallery_used-car-mobil123-toyota-yaris-trd-sportivo-hatchback-indonesia_000001126848_f9aec2af_013a_4080_abf2_3d2d44882a89.png | **Sangat Baik** |
| 64. | gallery_used-car-mobil123-honda-brio-e-hatchback-indonesia_000002726438_79fc9a40_d727_40d6_8beb_d848ce8b872d.png | gallery_used-car-mobil123-honda-brio-e-hatchback-indonesia_000002726438_79fc9a40_d727_40d6_8beb_d848ce8b872d.png | **Sangat Baik** |
| 65. | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000008505848_bb46cd0c_ff5d_4ff0_8f9b_4eded98c206f.png | gallery_used-car-mobil123-honda-brio-satya-e-hatchback-indonesia_000008505848_bb46cd0c_ff5d_4ff0_8f9b_4eded98c206f.png | **Sangat Baik** |
| 66. | gallery_used-car-mobil123-honda-civic-e-hatchback-indonesia_000008553448_5ed52570_34a8_4f57_b3a1_ba4c19e89441.png | gallery_used-car-mobil123-honda-civic-e-hatchback-indonesia_000008553448_5ed52570_34a8_4f57_b3a1_ba4c19e89441.png | **Sangat Baik** |
| 67. | gallery_used-car-mobil123-honda-hr-v-e-suv-indonesia_000009548748_3fca036a_56d2_43b5_900e_86fd30ebb8c5.png | gallery_used-car-mobil123-honda-hr-v-e-suv-indonesia_000009548748_3fca036a_56d2_43b5_900e_86fd30ebb8c5.png | **Sangat Baik** |
| 68. | gallery_used-car-mobil123-nissan-march-1.2l-hatchback-indonesia_000003267848_572a7fc9_dc5c_4e58_82f8_7e5dcc294ed5.png | gallery_used-car-mobil123-nissan-march-1.2l-hatchback-indonesia_000003267848_572a7fc9_dc5c_4e58_82f8_7e5dcc294ed5.png | **Sangat Baik** |
| 69. | gallery_used-car-mobil123-porsche-911-carrera-coupe-indonesia_000007058918_8c45075c_a8ea_4fb2_a69c_f5f2e0923fb3.png | gallery_used-car-mobil123-porsche-911-carrera-coupe-indonesia_000007058918_8c45075c_a8ea_4fb2_a69c_f5f2e0923fb3.png | **Sangat Baik** |
| 70. | gallery_used-car-mobil123-toyota-agya-g-hatchback-indonesia_000006291948_ed1f9cf3_ef54_45c5_a24c_cbd81960b3b3.png | gallery_used-car-mobil123-toyota-agya-g-hatchback-indonesia_000006291948_ed1f9cf3_ef54_45c5_a24c_cbd81960b3b3.png | **Kurang Optimal** |
| 71. | gallery_used-car-mobil123-toyota-agya-trd-hatchback-indonesia_000008349428_c341a707_5f12_4ad2_9197_b01b45f5fbd5.png | gallery_used-car-mobil123-toyota-agya-trd-hatchback-indonesia_000008349428_c341a707_5f12_4ad2_9197_b01b45f5fbd5.png | **Kurang Optimal** |
| 72. | gallery_used-car-mobil123-toyota-yaris-e-hatchback-indonesia_000002614038_19e917cc_41c5_49f7_84b0_831b87fca936.png | gallery_used-car-mobil123-toyota-yaris-e-hatchback-indonesia_000002614038_19e917cc_41c5_49f7_84b0_831b87fca936.png | **Sangat Baik** |
| 73. | gallery_used-car-mobil123-volkswagen-polo-highline-tsi-hatchback-indonesia_000001182318_8a0d1684_f435_4eb3_9fa1_d6edb41aa5fd.png | gallery_used-car-mobil123-volkswagen-polo-highline-tsi-hatchback-indonesia_000001182318_8a0d1684_f435_4eb3_9fa1_d6edb41aa5fd.png | **Kurang Optimal** |
| 74. | gallery_used-car-mobil123-honda-brio-rs-hatchback-indonesia_000003201428_9a12e8a5_f0ae_4b6d_bbba_073fd5ee0b02.png | gallery_used-car-mobil123-honda-brio-rs-hatchback-indonesia_000003201428_9a12e8a5_f0ae_4b6d_bbba_073fd5ee0b02.png | **Sangat Baik** |
| 75. | gallery_used-car-mobil123-honda-jazz-rs-hatchback-indonesia_000002149148_7c8ed65a_35e1_4d2d_952c_71f524961583.png | gallery_used-car-mobil123-honda-jazz-rs-hatchback-indonesia_000002149148_7c8ed65a_35e1_4d2d_952c_71f524961583.png | **Sangat Baik** |
| 76. | gallery_used-car-mobil123-lamborghini-aventador-lp700-4-convertible-indonesia_000001177838_4f222071_9735_4e9a_ab42_f0e74cc081bd.png | gallery_used-car-mobil123-lamborghini-aventador-lp700-4-convertible-indonesia_000001177838_4f222071_9735_4e9a_ab42_f0e74cc081bd.png | **Tidak Baik** |
| 77. | gallery_used-car-mobil123-mini-cooper-s-hatchback-indonesia_000005089938_60b74229_1176_43f9_bbf9_6b2eb309bed5.png | gallery_used-car-mobil123-mini-cooper-s-hatchback-indonesia_000005089938_60b74229_1176_43f9_bbf9_6b2eb309bed5.png | **Sangat Baik** |
| 78. | gallery_used-car-mobil123-smart-fortwo-passion-coupe-indonesia_000009981518_4de2f1d2_8db1_42ae_bef3_df1c10ed9e37.png | gallery_used-car-mobil123-smart-fortwo-passion-coupe-indonesia_000009981518_4de2f1d2_8db1_42ae_bef3_df1c10ed9e37.png | **Sangat Baik** |
| 79. | gallery_used-car-mobil123-suzuki-katana-jeep-indonesia_000007995638_f9490cd4_a96d_40ff_a0a6_ee873893bc0b.png | gallery_used-car-mobil123-suzuki-katana-jeep-indonesia_000007995638_f9490cd4_a96d_40ff_a0a6_ee873893bc0b.png | **Sangat Baik** |
| 80. | gallery_used-car-mobil123-suzuki-xl7-alpha-wagon-indonesia_000005217138_65695aac_ef12_4677_b0a7_9bfdf6b88e7f.png | gallery_used-car-mobil123-suzuki-xl7-alpha-wagon-indonesia_000005217138_65695aac_ef12_4677_b0a7_9bfdf6b88e7f.png | **Sangat Baik** |
| 81. | gallery_used-car-mobil123-toyota-calya-g-mpv-indonesia_000001580628_5075e474_af71_4f29_ac4e_3bde13ab0c75.png | gallery_used-car-mobil123-toyota-calya-g-mpv-indonesia_000001580628_5075e474_af71_4f29_ac4e_3bde13ab0c75.png | **Sangat Baik** |
| 82. | gallery_used-car-mobil123-toyota-calya-g-mpv-indonesia_000009437748_3f97d156_9f70_4bf0_8ae8_da1a1521598f.png | gallery_used-car-mobil123-toyota-calya-g-mpv-indonesia_000009437748_3f97d156_9f70_4bf0_8ae8_da1a1521598f.png | **Tidak Baik** |
| 83. | gallery_used-car-mobil123-toyota-sienta-q-mpv-indonesia_000001699848_b834873a_92f5_4353_a799_632ef2bce25b.png | gallery_used-car-mobil123-toyota-sienta-q-mpv-indonesia_000001699848_b834873a_92f5_4353_a799_632ef2bce25b.png | **Sangat Baik** |

**Rekap Hasil Eksperimen Program ROI**

|  |  |  |
| --- | --- | --- |
| **Kategori** | **Jumlah** | **Persentase** |
| **Sangat Baik** | **60/83** | **72,3%** |
| **Kurang Optimal** | **6/83** | **7,2%** |
| **Tidak Baik** | **17 /83** | **20,5%** |

**Hasil Final Ekstraksi ROI**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Color | Face | Jumlah Awal | Jumlah Sangat Baik | Jumlah Kurang Optimal | Jumlah Tidak Baik |
| Kuning | Front | 10 | 9 | 0 | 1 |
| Back | 10 | 6 | 0 | 4 |
| TOTAL | | 20 | 15 | 0 | 5 |
| Maroon | Front | 11 | 9 | 2 | 0 |
| Back | 11 | 7 | 0 | 4 |
| TOTAL | | 22 | 16 | 2 | 4 |
| Merah | Front | 11 | 7 | 1 | 3 |
| Back | 10 | 7 | 3 | 0 |
| TOTAL | | 21 | 14 | 4 | 3 |
| Orange | Front | 10 | 7 | 0 | 3 |
| Back | 10 | 8 | 0 | 2 |
| TOTAL | | 20 | 15 | 0 | 5 |

**Jumlah Citra yang lanjut**

**(15 + 16 + 14 + 15) + (0 + 2 + 4 +0) = 66**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Color | Face | Jumlah Sangat Baik | Jumlah Kurang Optimal | Jumlah data lanjut per warna |
| Kuning | Front | 9 | 0 | 15 |
| Back | 6 | 0 |
| Maroon | Front | 9 | 2 | 18 |
| Back | 7 | 0 |
| Merah | Front | 7 | 1 | 18 |
| Back | 7 | 3 |
| Orange | Front | 7 | 0 | 15 |
| Back | 8 | 0 |

**Hasil Eksperimen Pengenalan Warna Menggunakan Color Moments dan K-Nearaest Neighbor**

**Pengujian pada dataset dengan pembagian 60% data latih vs 40% data uji.**

1. Statistik Data yang digunakan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Color | | Data Latih | | Data Uji | |
| Kuning | | 9 | | 6 | |
| Maroon | | 11 | | 7 | |
| Merah | | 11 | | 7 | |
| Orange | | 9 | | 6 | |
| TOTAL | 40 | | 26 | |

Daftar Nama file untuk Data Latih 60 VS 40

|  |  |
| --- | --- |
| No. | Nama File |
| 1 | Kuning 07\_roi\_front\_Kuning.jpg |
| 2 | Kuning 08\_roi\_front\_Kuning.jpg |
| 3 | Kuning 09\_roi\_front\_Kuning.jpg |
| 4 | Kuning 42\_roi\_back\_Kuning.jpg |
| 5 | Kuning 44\_roi\_back\_Kuning.jpg |
| 6 | Kuning 45\_roi\_back\_Kuning.jpg |
| 7 | Kuning 47\_roi\_back\_Kuning.jpg |
| 8 | Kuning 48\_roi\_back\_Kuning.jpg |
| 9 | Kuning 49\_roi\_back\_Kuning.jpg |
| 10 | Maroon 17\_roi\_front\_Maroon.jpg |
| 11 | Maroon 18\_roi\_front\_Maroon.jpg |
| 12 | Maroon 19\_roi\_front\_Maroon.jpg |
| 13 | Maroon 20\_roi\_front\_Maroon.jpg |
| 14 | Maroon 52\_roi\_back\_Maroon.jpg |
| 15 | Maroon 55\_roi\_back\_Maroon.jpg |
| 16 | Maroon 56\_roi\_back\_Maroon.jpg |
| 17 | Maroon 57\_roi\_back\_Maroon.jpg |
| 18 | Maroon 59\_roi\_back\_Maroon.jpg |
| 19 | Maroon 60\_roi\_back\_Maroon.jpg |
| 20 | Maroon 62\_roi\_back\_Maroon.jpg |
| 21 | Merah 31\_roi\_front\_Merah.jpg |
| 22 | Merah 63\_roi\_back\_Merah.jpg |
| 23 | Merah 64\_roi\_back\_Merah.jpg |
| 24 | Merah 65\_roi\_back\_Merah.jpg |
| 25 | Merah 66\_roi\_back\_Merah.jpg |
| 26 | Merah 67\_roi\_back\_Merah.jpg |
| 27 | Merah 68\_roi\_back\_Merah.jpg |
| 28 | Merah 69\_roi\_back\_Merah.jpg |
| 29 | Merah 70\_roi\_back\_Merah.jpg |
| 30 | Merah 71\_roi\_back\_Merah.jpg |
| 31 | Merah 72\_roi\_back\_Merah.jpg |
| 32 | Orange 41\_roi\_front\_Orange.jpg |
| 33 | Orange 73\_roi\_back\_Orange.jpg |
| 34 | Orange 74\_roi\_back\_Orange.jpg |
| 35 | Orange 76\_roi\_back\_Orange.jpg |
| 36 | Orange 77\_roi\_back\_Orange.jpg |
| 37 | Orange 78\_roi\_back\_Orange.jpg |
| 38 | Orange 79\_roi\_back\_Orange.jpg |
| 39 | Orange 80\_roi\_back\_Orange.jpg |
| 40 | Orange 82\_roi\_back\_Orange.jpg |

Daftar Nama file untuk Data Uji 60 VS 40

|  |  |
| --- | --- |
| No. | Nama File |
| 1 | Kuning 00\_roi\_front\_Kuning.jpg |
| 2 | Kuning 01\_roi\_front\_Kuning.jpg |
| 3 | Kuning 02\_roi\_front\_Kuning.jpg |
| 4 | Kuning 03\_roi\_front\_Kuning.jpg |
| 5 | Kuning 05\_roi\_front\_Kuning.jpg |
| 6 | Kuning 06\_roi\_front\_Kuning.jpg |
| 7 | Maroon 10\_roi\_front\_Maroon.jpg |
| 8 | Maroon 11\_roi\_front\_Maroon.jpg |
| 9 | Maroon 12\_roi\_front\_Maroon.jpg |
| 10 | Maroon 13\_roi\_front\_Maroon.jpg |
| 11 | Maroon 14\_roi\_front\_Maroon.jpg |
| 12 | Maroon 15\_roi\_front\_Maroon.jpg |
| 13 | Maroon 16\_roi\_front\_Maroon.jpg |
| 14 | Merah 22\_roi\_front\_Merah.jpg |
| 15 | Merah 24\_roi\_front\_Merah.jpg |
| 16 | Merah 25\_roi\_front\_Merah.jpg |
| 17 | Merah 26\_roi\_front\_Merah.jpg |
| 18 | Merah 28\_roi\_front\_Merah.jpg |
| 19 | Merah 29\_roi\_front\_Merah.jpg |
| 20 | Merah 30\_roi\_front\_Merah.jpg |
| 21 | Orange 32\_roi\_front\_Orange.jpg |
| 22 | Orange 34\_roi\_front\_Orange.jpg |
| 23 | Orange 36\_roi\_front\_Orange.jpg |
| 24 | Orange 37\_roi\_front\_Orange.jpg |
| 25 | Orange 38\_roi\_front\_Orange.jpg |
| 26 | Orange 39\_roi\_front\_Orange.jpg |

1. Hasil Pengujian menggunakan K=3 terhadap data Uji

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 6 | 0 | 0 | 0 |
| Maroon | 1 | 2 | 3 | 1 |
| Merah | 0 | 5 | 2 | 0 |
| Orange | 1 | 1 | 1 | 3 |

Akurasi = (6+2+2+3)/26 x 100% = 50%

1. Hasil Pengujian menggunakan K=5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 5 | 0 | 1 | 0 |
| Maroon | 1 | 4 | 2 | 0 |
| Merah | 0 | 4 | 3 | 0 |
| Orange | 1 | 0 | 5 | 0 |

Akurasi = (5+4+3+0)/26 x 100% = 46,2%

1. Hasil Pengujian menggunakan K=7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 5 | 0 | 1 | 0 |
| Maroon | 1 | 4 | 2 | 0 |
| Merah | 0 | 4 | 2 | 1 |
| Orange | 1 | 0 | 4 | 1 |

Akurasi = (5+4+2+1)/26 x 100% = 46,2%

**Pengujian pada dataset dengan pembagian 70% data latih vs 30% data uji.**

1. Statistik Data yang digunakan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Color | | Data Latih | | Data Uji | |
| Kuning | | 11 | | 4 | |
| Maroon | | 13 | | 5 | |
| Merah | | 13 | | 5 | |
| Orange | | 11 | | 4 | |
| TOTAL | 48 | | 18 | |

Daftar Nama file untuk Data Latih 70 VS 30

|  |  |
| --- | --- |
| No | Nama File |
| 1 | Kuning 05\_roi\_front\_Kuning.jpg |
| 2 | Kuning 06\_roi\_front\_Kuning.jpg |
| 3 | Kuning 07\_roi\_front\_Kuning.jpg |
| 4 | Kuning 08\_roi\_front\_Kuning.jpg |
| 5 | Kuning 09\_roi\_front\_Kuning.jpg |
| 6 | Kuning 42\_roi\_back\_Kuning.jpg |
| 7 | Kuning 44\_roi\_back\_Kuning.jpg |
| 8 | Kuning 45\_roi\_back\_Kuning.jpg |
| 9 | Kuning 47\_roi\_back\_Kuning.jpg |
| 10 | Kuning 48\_roi\_back\_Kuning.jpg |
| 11 | Kuning 49\_roi\_back\_Kuning.jpg |
| 12 | Maroon 15\_roi\_front\_Maroon.jpg |
| 13 | Maroon 16\_roi\_front\_Maroon.jpg |
| 14 | Maroon 17\_roi\_front\_Maroon.jpg |
| 15 | Maroon 18\_roi\_front\_Maroon.jpg |
| 16 | Maroon 19\_roi\_front\_Maroon.jpg |
| 17 | Maroon 20\_roi\_front\_Maroon.jpg |
| 18 | Maroon 52\_roi\_back\_Maroon.jpg |
| 19 | Maroon 55\_roi\_back\_Maroon.jpg |
| 20 | Maroon 56\_roi\_back\_Maroon.jpg |
| 21 | Maroon 57\_roi\_back\_Maroon.jpg |
| 22 | Maroon 59\_roi\_back\_Maroon.jpg |
| 23 | Maroon 60\_roi\_back\_Maroon.jpg |
| 24 | Maroon 62\_roi\_back\_Maroon.jpg |
| 25 | Merah 29\_roi\_front\_Merah.jpg |
| 26 | Merah 30\_roi\_front\_Merah.jpg |
| 27 | Merah 31\_roi\_front\_Merah.jpg |
| 28 | Merah 63\_roi\_back\_Merah.jpg |
| 29 | Merah 64\_roi\_back\_Merah.jpg |
| 30 | Merah 65\_roi\_back\_Merah.jpg |
| 31 | Merah 66\_roi\_back\_Merah.jpg |
| 32 | Merah 67\_roi\_back\_Merah.jpg |
| 33 | Merah 68\_roi\_back\_Merah.jpg |
| 34 | Merah 69\_roi\_back\_Merah.jpg |
| 35 | Merah 70\_roi\_back\_Merah.jpg |
| 36 | Merah 71\_roi\_back\_Merah.jpg |
| 37 | Merah 72\_roi\_back\_Merah.jpg |
| 38 | Orange 38\_roi\_front\_Orange.jpg |
| 39 | Orange 39\_roi\_front\_Orange.jpg |
| 40 | Orange 41\_roi\_front\_Orange.jpg |
| 41 | Orange 73\_roi\_back\_Orange.jpg |
| 42 | Orange 74\_roi\_back\_Orange.jpg |
| 43 | Orange 76\_roi\_back\_Orange.jpg |
| 44 | Orange 77\_roi\_back\_Orange.jpg |
| 45 | Orange 78\_roi\_back\_Orange.jpg |
| 46 | Orange 79\_roi\_back\_Orange.jpg |
| 47 | Orange 80\_roi\_back\_Orange.jpg |
| 48 | Orange 82\_roi\_back\_Orange.jpg |

Daftar Nama file untuk Data Uji 70 VS 30

|  |  |
| --- | --- |
| No. | Nama File |
| 1 | Kuning 00\_roi\_front\_Kuning.jpg |
| 2 | Kuning 01\_roi\_front\_Kuning.jpg |
| 3 | Kuning 02\_roi\_front\_Kuning.jpg |
| 4 | Kuning 03\_roi\_front\_Kuning.jpg |
| 5 | Maroon 10\_roi\_front\_Maroon.jpg |
| 6 | Maroon 11\_roi\_front\_Maroon.jpg |
| 7 | Maroon 12\_roi\_front\_Maroon.jpg |
| 8 | Maroon 13\_roi\_front\_Maroon.jpg |
| 9 | Maroon 14\_roi\_front\_Maroon.jpg |
| 10 | Merah 22\_roi\_front\_Merah.jpg |
| 11 | Merah 24\_roi\_front\_Merah.jpg |
| 12 | Merah 25\_roi\_front\_Merah.jpg |
| 13 | Merah 26\_roi\_front\_Merah.jpg |
| 14 | Merah 28\_roi\_front\_Merah.jpg |
| 15 | Orange 32\_roi\_front\_Orange.jpg |
| 16 | Orange 34\_roi\_front\_Orange.jpg |
| 17 | Orange 36\_roi\_front\_Orange.jpg |
| 18 | Orange 37\_roi\_front\_Orange.jpg |

1. Hasil Pengujian menggunakan K=3 terhadap data Uji

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 3 | 0 | 0 | 1 |
| Maroon | 1 | 0 | 3 | 1 |
| Merah | 0 | 3 | 2 | 0 |
| Orange | 0 | 0 | 1 | 3 |

Akurasi = (3+0+2+3)/18 x 100% = 44,4%

1. Hasil Pengujian menggunakan K=5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 3 | 0 | 0 | 1 |
| Maroon | 1 | 2 | 2 | 0 |
| Merah | 0 | 3 | 2 | 0 |
| Orange | 0 | 0 | 3 | 1 |

Akurasi = (3+2+2+1)/18 x 100% = 44,4%

1. Hasil Pengujian menggunakan K=7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 4 | 0 | 0 | 0 |
| Maroon | 1 | 3 | 1 | 0 |
| Merah | 0 | 3 | 2 | 0 |
| Orange | 0 | 0 | 3 | 1 |

Akurasi = (4+3+2+1)/18 x 100% = 55,5%

**Pengujian pada dataset dengan pembagian 80% data latih vs 20% data uji.**

1. Statistik Data yang digunakan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Color | | Data Latih | | Data Uji | |
| Kuning | | 12 | | 3 | |
| Maroon | | 14 | | 4 | |
| Merah | | 14 | | 4 | |
| Orange | | 12 | | 3 | |
| TOTAL | 52 | | 14 | |

Daftar Nama file untuk Data Latih 80 VS 20

|  |  |
| --- | --- |
| No. | Nama File |
| 1 | Kuning 03\_roi\_front\_Kuning.jpg |
| 2 | Kuning 05\_roi\_front\_Kuning.jpg |
| 3 | Kuning 06\_roi\_front\_Kuning.jpg |
| 4 | Kuning 07\_roi\_front\_Kuning.jpg |
| 5 | Kuning 08\_roi\_front\_Kuning.jpg |
| 6 | Kuning 09\_roi\_front\_Kuning.jpg |
| 7 | Kuning 42\_roi\_back\_Kuning.jpg |
| 8 | Kuning 44\_roi\_back\_Kuning.jpg |
| 9 | Kuning 45\_roi\_back\_Kuning.jpg |
| 10 | Kuning 47\_roi\_back\_Kuning.jpg |
| 11 | Kuning 48\_roi\_back\_Kuning.jpg |
| 12 | Kuning 49\_roi\_back\_Kuning.jpg |
| 13 | Maroon 14\_roi\_front\_Maroon.jpg |
| 14 | Maroon 15\_roi\_front\_Maroon.jpg |
| 15 | Maroon 16\_roi\_front\_Maroon.jpg |
| 16 | Maroon 17\_roi\_front\_Maroon.jpg |
| 17 | Maroon 18\_roi\_front\_Maroon.jpg |
| 18 | Maroon 19\_roi\_front\_Maroon.jpg |
| 19 | Maroon 20\_roi\_front\_Maroon.jpg |
| 20 | Maroon 52\_roi\_back\_Maroon.jpg |
| 21 | Maroon 55\_roi\_back\_Maroon.jpg |
| 22 | Maroon 56\_roi\_back\_Maroon.jpg |
| 23 | Maroon 57\_roi\_back\_Maroon.jpg |
| 24 | Maroon 59\_roi\_back\_Maroon.jpg |
| 25 | Maroon 60\_roi\_back\_Maroon.jpg |
| 26 | Maroon 62\_roi\_back\_Maroon.jpg |
| 27 | Merah 28\_roi\_front\_Merah.jpg |
| 28 | Merah 29\_roi\_front\_Merah.jpg |
| 29 | Merah 30\_roi\_front\_Merah.jpg |
| 30 | Merah 31\_roi\_front\_Merah.jpg |
| 31 | Merah 63\_roi\_back\_Merah.jpg |
| 32 | Merah 64\_roi\_back\_Merah.jpg |
| 33 | Merah 65\_roi\_back\_Merah.jpg |
| 34 | Merah 66\_roi\_back\_Merah.jpg |
| 35 | Merah 67\_roi\_back\_Merah.jpg |
| 36 | Merah 68\_roi\_back\_Merah.jpg |
| 37 | Merah 69\_roi\_back\_Merah.jpg |
| 38 | Merah 70\_roi\_back\_Merah.jpg |
| 39 | Merah 71\_roi\_back\_Merah.jpg |
| 40 | Merah 72\_roi\_back\_Merah.jpg |
| 41 | Orange 37\_roi\_front\_Orange.jpg |
| 42 | Orange 38\_roi\_front\_Orange.jpg |
| 43 | Orange 39\_roi\_front\_Orange.jpg |
| 44 | Orange 41\_roi\_front\_Orange.jpg |
| 45 | Orange 73\_roi\_back\_Orange.jpg |
| 46 | Orange 74\_roi\_back\_Orange.jpg |
| 47 | Orange 76\_roi\_back\_Orange.jpg |
| 48 | Orange 77\_roi\_back\_Orange.jpg |
| 49 | Orange 78\_roi\_back\_Orange.jpg |
| 50 | Orange 79\_roi\_back\_Orange.jpg |
| 51 | Orange 80\_roi\_back\_Orange.jpg |
| 52 | Orange 82\_roi\_back\_Orange.jpg |

Daftar Nama file untuk Data Uji 80 VS 20

|  |  |
| --- | --- |
| No | Nama File |
| 1. | Kuning 00\_roi\_front\_Kuning.jpg |
| 2. | Kuning 01\_roi\_front\_Kuning.jpg |
| 3. | Kuning 02\_roi\_front\_Kuning.jpg |
| 4. | Maroon 10\_roi\_front\_Maroon.jpg |
| 5. | Maroon 11\_roi\_front\_Maroon.jpg |
| 6. | Maroon 12\_roi\_front\_Maroon.jpg |
| 7. | Maroon 13\_roi\_front\_Maroon.jpg |
| 8. | Merah 22\_roi\_front\_Merah.jpg |
| 9. | Merah 24\_roi\_front\_Merah.jpg |
| 10. | Merah 25\_roi\_front\_Merah.jpg |
| 11. | Merah 26\_roi\_front\_Merah.jpg |
| 12. | Orange 32\_roi\_front\_Orange.jpg |
| 13. | Orange 34\_roi\_front\_Orange.jpg |
| 14. | Orange 36\_roi\_front\_Orange.jpg |

1. Hasil Pengujian menggunakan K=3 terhadap data Uji

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 2 | 0 | 0 | 1 |
| Maroon | 1 | 0 | 2 | 1 |
| Merah | 1 | 1 | 2 | 0 |
| Orange | 0 | 0 | 1 | 2 |

Akurasi = (2+0+2+2)/14 x 100% = 42,9%

1. Hasil Pengujian menggunakan K=5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 2 | 0 | 0 | 1 |
| Maroon | 1 | 2 | 1 | 0 |
| Merah | 0 | 2 | 2 | 0 |
| Orange | 0 | 0 | 2 | 1 |

Akurasi = (2+2+2+1)/14 x 100% = 50%

1. Hasil Pengujian menggunakan K=7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Kuning | Maroon | Merah | Orange |
| Kuning | 3 | 0 | 0 | 0 |
| Maroon | 1 | 3 | 0 | 0 |
| Merah | 0 | 2 | 2 | 0 |
| Orange | 0 | 0 | 2 | 1 |

Akurasi = (3+3+2+1)/14 x 100% = 64,3%

**Rekap Akurasi Hasil Eksperimen:**

|  |  |  |  |
| --- | --- | --- | --- |
| K = | 60 VS 40 | 70 VS 30 | 80 VS 20 |
| 3 | 50% | 44,4% | 42,9% |
| 5 | 46,2% | 44,4% | 50% |
| 7 | 46,2% | 55,5% | 64,3% |

**10 Contoh Hasil Klasifikasi yang SALAH berdasarkan K=7 60v40**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Citra** | **ROI** | **Warna Asli** | **Prediksi** |
| **1.** |  |  | Kuning | Merah |
| **2.** |  |  | Maroon | Kuning |
| **3.** |  |  | Maroon | Merah |
| **4.** |  |  | Maroon | Merah |
| **5.** |  |  | Merah | Maroon |
| **6.** |  |  | Merah | Orange |
| **7.** |  |  | Merah | Maroon |
| **8.** |  |  | Orange | Merah |
| **9.** |  |  | Orange | Kuning |
| **10** |  |  | Orange | Merah |