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## Lampiran 1

### *Pseudocode Login*

```
Login
2  Δ non aktifkan tombol menu pra_proses dan latih_uji_pengenalan
3  btnPra.setEnabled(false)
4  btnRec.setEnabled(false)
5  Δ mengambil informasi login user google
6  UserService userService ← UserServiceFactory.getUserService()
7  User user ← userService.getCurrentUser()
8  LoginInfo loginInfo ← new LoginInfo()
9  if (user != null)
10     loginInfo.setLoggedIn(true)
11     loginInfo.setEmailAddress(user.getEmail())
12     loginInfo.setNickname(user.getNickname())
13     loginInfo.setLogoutUrl
        (userService.createLogoutURL(requestUri))
14     else
15     loginInfo.setLoggedIn(false)
16     loginInfo.setLoginUrl
        (userService.createLoginURL(requestUri))
17 Δ menggunakan informasi login
18 if(loginInfo.isLoggedIn())
19     ambilLogin← "Welcome "+result.getNickname()
20     Δ Set up sign out hyperlink.
21     loginLabel.setText(ambilLogin)
22     signLink.setText("Sign Out")
23     signLink.setHref(loginInfo.getLogoutUrl())
24     btnPra.setEnabled(true)
25     btnRec.setEnabled(true)
26 Else
27     Δ Set up sign in hyperlink.
28     ambilLogin ← "Please sign in to your Google Account to
        access this application."
29     loginLabel.setText(ambilLogin)
30     signLink.setText("Sign In")
31     signLink.setHref(loginInfo.getLoginUrl())
32     btnPra.setEnabled(false)
33     btnRec.setEnabled(false)
```

## Lampiran 2

### Pseudocode Pra-analisis

Pra-analisis

```
1  Δ input relasi
2  relasi ← masukkan relasi
3  Δ mengambil data dari datastroe dan dimasukkan ke kembali
4  Query<CitraML> q ← ofy.query(CitraML.class)
   .filter("relasi =", relasi);
5  String[][] kembali ← null;
6  if(q.count()>0)
7      kembali ← new String[q.count()][18];
8      int i← 0;
9      for (CitraML citraml: q)
10         kembali[i][0] ← citraml.getImageUrl();
11         kembali[i][1] ← String.valueOf(citraml.getBow01());
12         kembali[i][2] ← String.valueOf(citraml.getBow02());
13         kembali[i][3] ← String.valueOf(citraml.getBow03());
14         kembali[i][4] ← String.valueOf(citraml.getBow04());
15         kembali[i][5] ← String.valueOf(citraml.getBow05());
16         kembali[i][6] ← String.valueOf(citraml.getBow06());
17         kembali[i][7] ← String.valueOf(citraml.getBow07());
18         kembali[i][8] ← String.valueOf(citraml.getBow08());
19         kembali[i][9] ← String.valueOf(citraml.getBow09());
20         kembali[i][10] ← String.valueOf(citraml.getBow10());
21         kembali[i][11] ← String.valueOf(citraml.getBow11());
22         kembali[i][12] ← String.valueOf(citraml.getBow12());
23         kembali[i][13] ← String.valueOf(citraml.getBow13());
24         kembali[i][14] ← String.valueOf(citraml.getBow14());
25         kembali[i][15] ← String.valueOf(citraml.getBow15());
26         kembali[i][16] ← String.valueOf(citraml.getBow16());
27         kembali[i][17] ← citraml.getTarget();
28         i++;
29  Δ jika data relasi telah ada, maka data set ditampilkan ke browser
30  if(kembali!=null)
31      for(int i← 0;i<kembali.length;i++)
32          Image image ← new Image();
33          image.setSize("32px", "32px");
34          image.setUrl(kembali[i][0]);
35          resultsTable.setText(brs, 0, String.valueOf(brs));
36          resultsTable.setWidget(brs, 1, image);
37          resultsTable.setText(brs, 2, result[i][1]);
38          resultsTable.setText(brs, 3, result[i][2]);
39          resultsTable.setText(brs, 4, result[i][3]);
40          resultsTable.setText(brs, 5, result[i][4]);
41          resultsTable.setText(brs, 6, result[i][5]);
42          resultsTable.setText(brs, 7, result[i][6]);
43          resultsTable.setText(brs, 8, result[i][7]);
44          resultsTable.setText(brs, 9, result[i][8]);
```

```

45         resultsTable.setText(brs, 10, result[i][9]);
46         resultsTable.setText(brs, 11, result[i][10]);
47         resultsTable.setText(brs, 12, result[i][11]);
48         resultsTable.setText(brs, 13, result[i][12]);
49         resultsTable.setText(brs, 14, result[i][13]);
50         resultsTable.setText(brs, 15, result[i][14]);
51         resultsTable.setText(brs, 16, result[i][15]);
52         resultsTable.setText(brs, 17, result[i][16]);
53         resultsTable.setText(brs, 18, result[i][17]);
54         brs++;
55 Load file_citra
56 Jenis_kelas ← masukkan jenis kelas
57 Δ upload data
58 data_citra ← relasi, file_citra, jenis_kelas
59 normalisasi_dan_bag_of_words(data_citra)
60 Δ simpan dataset latih dan uji
61 CitraML citraML ← new CitraML();
62 citraML.setRelasi(relasi);
63 citraML.setTarget(klsTarget);
64 citraML.setImageUrl(citraUrl);
65 citraML.setBow01(pixbow1);
66 citraML.setBow02(pixbow2);
67 citraML.setBow03(pixbow3);
68 citraML.setBow04(pixbow4);
69 citraML.setBow05(pixbow5);
70 citraML.setBow06(pixbow6);
71 citraML.setBow07(pixbow7);
72 citraML.setBow08(pixbow8);
73 citraML.setBow09(pixbow9);
74 citraML.setBow10(pixbow10);
75 citraML.setBow11(pixbow11);
76 citraML.setBow12(pixbow12);
77 citraML.setBow13(pixbow13);
78 citraML.setBow14(pixbow14);
79 citraML.setBow15(pixbow15);
80 citraML.setBow16(pixbow16);
81 ofy.put(citraML);
82 Δ tampilkan dataset latih dan uji ke browser
83 Image image ← new Image();
84 image.setSize("32px", "32px");
85 image.setUrl(result.getImageUrl());
86 resultsTable.setText(brs, 0, String.valueOf(brs));
87 resultsTable.setWidget(brs, 1, image);
88 resultsTable.setText(brs, 2, String.valueOf(result.getBow01()));
89 resultsTable.setText(brs, 3, String.valueOf(result.getBow02()));
90 resultsTable.setText(brs, 4, String.valueOf(result.getBow03()));
91 resultsTable.setText(brs, 5, String.valueOf(result.getBow04()));
92 resultsTable.setText(brs, 6, String.valueOf(result.getBow05()));
93 resultsTable.setText(brs, 7, String.valueOf(result.getBow06()));
94 resultsTable.setText(brs, 8, String.valueOf(result.getBow07()));
95 resultsTable.setText(brs, 9, String.valueOf(result.getBow08()));
96 resultsTable.setText(brs, 10, String.valueOf(result.getBow09()));
97 resultsTable.setText(brs, 11, String.valueOf(result.getBow10()));
98 resultsTable.setText(brs, 12, String.valueOf(result.getBow11()));

```

```
99 resultsTable.setText(brs, 13, String.valueOf(result.getBow12()));
100 resultsTable.setText(brs, 14, String.valueOf(result.getBow13()));
101 resultsTable.setText(brs, 15, String.valueOf(result.getBow14()));
102 resultsTable.setText(brs, 16, String.valueOf(result.getBow15()));
103 resultsTable.setText(brs, 17, String.valueOf(result.getBow16()));
104 resultsTable.setText(brs, 18, result.getTarget());
105 ulangi langkah 55 sampai 104 jika masih ada data
```

## Lampiran 3

### *Pseudocode* Latih\_uji\_pengenalan

```
Latih_uji_pengenalan
1  Δ input dan set data
2  relasi ← masukkan relasi
3  pilih algoML
4      0 : SVM
5      1 : NaiveBayes
6      2 : C4.5
7      3 : KNN
8      4 : Logistic
9      5 : RandomForest
10 persentasiLatih ← atur persentasi latih
11 Δ mengambil data dari datastore sesuai relasi dan diubah menjadi format ARFF
12 Query<CitraML> dataset_citra ← ofy.query(CitraML.class)
    .filter("relasi =", relasi);
13 Konversi_dataset_ke_ARFF(dataset_citra)
14 Δ membagi data set latih uji sesuai persentasi yang diberikan
15 latihSize ←
    Math.round(dataSet.numInstances()*persentasiLatih/100);
16 tesSize ← dataSet.numInstances() - latihSize;
17 Instances latih ← new Instances(dataSet,0,latihSize);
18 Instances tes ← new Instances(dataSet,latihSize,tesSize);
19 latih.setClassIndex(16);
20 tes.setClassIndex(16);
21 Δ memilih algoritma yang akan digunakan untuk pelatihan sesuai pilih agoML
22 Classifier klasAlgo ← null;
23 if(algoML==0)
24     klasAlgo ← new LibSVM();
25 else if(algoML==1)
26     klasAlgo ← new NaiveBayes();
27 else if(algoML==2)
28     klasAlgo ← new J48();
29 if(algoML==3)
30     klasAlgo ← new IBk();
31 else if(algoML==4)
32     klasAlgo ← new Logistic();
33 else
34     klasAlgo ← new RandomForest();
35 Δ proses pelatihan
36 klasAlgo.buildClassifier(latih);
37 Δ proses pengujian
38 Evaluation evalTes ← new Evaluation(latih);
39 evalTes.evaluateModel(klasAlgo, tes);
40 Δ menampilkan hasil pelatihan dan pengujian
41 kembali ← new String();
42 kembali ← "Train Instances = "+String.valueOf(latihSize)+" ||
    Test Instances = "+String.valueOf(tesSize)+"\n";
43 kembali+="Time taken to build the model =
    "+String.valueOf(evalTes.totalCost()+" seconds \n");
```

```

44 kembali+= "Correctly classified =
    "+String.valueOf(evalTes.pctCorrect())+" % \n \n";
45 kembali+= evalTes.toMatrixString();
46 tampilkan kembali di browser
47 ulangi langkah 3 sampai 46 jika masih ingin melatih dan menguji
48 Δ menggunakan hasil learning untuk kebutuhan pengenalan citra
49 Load file_citra
50 Δ upload data
51 Dataset_pengenalan← relasi, file_citra
52 normalisasi_dan_bag_of_words(data_citra)
53 konversi_dataset_ke_ARFF(dataset_pengenalan)
54 Δ proses pengenalan citra, hasilnya dimasukkan ke klsTarget
55 try
56     instd ← klasAlgo.classifyInstance(inst);
57     klsTarget← (String) classVal.elementAt((int)(instd));
58 catch (Exception e)
59     e.printStackTrace();
60 Δ simpan hasil pengenalan
61 Relasi ← relasi+"tmp"
62 CitraML citraML ← new CitraML();
63 citraML.setRelasi(relasi);
64 citraML.setImageUrl(citraUrl);
65 citraML.setTarget(klsTarget);
66 citraML.setBow01(pixbow1);
67 citraML.setBow02(pixbow2);
68 citraML.setBow03(pixbow3);
69 citraML.setBow04(pixbow4);
70 citraML.setBow05(pixbow5);
71 citraML.setBow06(pixbow6);
72 citraML.setBow07(pixbow7);
73 citraML.setBow08(pixbow8);
74 citraML.setBow09(pixbow9);
75 citraML.setBow10(pixbow10);
76 citraML.setBow11(pixbow11);
77 citraML.setBow12(pixbow12);
78 citraML.setBow13(pixbow13);
79 citraML.setBow14(pixbow14);
80 citraML.setBow15(pixbow15);
81 citraML.setBow16(pixbow16);
82 ofy.put(citraML);
83 Δ tampilkan hasil pengenalan ke browser
84 Image image ← new Image();
85 image.setSize("64px", "64px");
86 image.setUrl(result.getImageUrl());
87 resultsTable.setText(brs, 0, String.valueOf(brs));
88 resultsTable.setWidget(brs, 1, image);
89 resultsTable.setText(brs, 2, "is it "+idKlstmp+" ?
    "+result.getTarget());
90 ulangi langkah 48 sampai 89 jika masih ada citra yang ingin
    dikenali sesuai relasi

```



## Lampiran 4

### *Pseudocode* Normalisasi\_BoW

```
normalisasi_dan_bag_of_words(data_citra)
1  Δ atur ukuran citra
2  ukuran_normal ← 64
3  Δ proses normalisasi citra
4  transformasi    ubah_ukuran    ←    mengubah_ukuran(ukuran_normal,
    ukuran_normal)
5  citra ← lakukan_transformasi (ubah_ukuran, data_citra)
6  Δ proses bag of words
7  Δ inialisasi variabel-variabel perulangan
8  ulang1 ← ukuran_normal / 4
9  ulang2 ← ulang1 * 2
10 ulang3 ← ulang1 * 3
11 ulang4 ← ulang1 * 4
12 pembagi ← (ukuran_normal/4)*(ukuran_normal/4)
13 Δ mengambil nilai kanal citra
14 kanal ← ambil_kanal_citra(citra)
15 Δ mengambil nilai rata-rata setiap pixel pada citra
16 for i ← 0 sampai ulang4 - 1 kerjakan
17     baris_citra ← baca_baris citra(i)
18     for j ← 0 sampai ulang4 - 1 kerjakan
19         pixelR ← baris_citra.scan_baris[j]*kanal]
20         pixelG ← baris_citra.scan_baris[j]*kanal+1]
21         pixelB ← baris_citra.scan_baris[j]*kanal+2]
22         rataRGB[i][j] ← (pixelR+pixelG+pixelB) / 3
23 Δ Mengambil nilai bag of words pixel citra untuk bow1
24 total ← 0
25 for i ← 0 sampai ulang1 - 1 kerjakan
26     for j ← 0 sampai ulang1 - 1 kerjakan
27         total ← total+rataRGB[i][j]
28 pixbow1 ← total / pembagi
29 Δ Mengambil nilai bag of words pixel citra untuk bow2
30 total ← 0
31 for i ← 0 sampai ulang1 - 1 kerjakan
32     for j ← ulang1 sampai ulang2 - 1 kerjakan
33         total ← total+rataRGB[i][j]
34 pixbow2 ← total / pembagi
35 Δ Mengambil nilai bag of words pixel citra untuk bow3
36 total ← 0
37 for i ← 0 sampai ulang1 - 1 kerjakan
38     for j ← ulang2 sampai ulang3 - 1 kerjakan
39         total ← total+rataRGB[i][j]
40 pixbow3 ← total / pembagi
41 Δ Mengambil nilai bag of words pixel citra untuk bow4
42 total ← 0
43 for i ← 0 sampai ulang1 - 1 kerjakan
44     for j ← ulang3 sampai ulang4 - 1 kerjakan
45         total ← total+rataRGB[i][j]
```

```

46 pixbow4 ← total / pembagi
47 Δ Mengambil nilai bag of words pixel citra untuk bow5
48 total ← 0
49 for i ← ulang1 sampai ulang2 - 1 kerjakan
50     for j ← 0 sampai ulang1 - 1 kerjakan
51         total ← total+rataRGB[i][j]
52 pixbow5 ← total / pembagi
53 Δ Mengambil nilai bag of words pixel citra untuk bow6
54 total ← 0
55 for i ← ulang1 sampai ulang2 - 1 kerjakan
56     for j ← ulang1 sampai ulang2 - 1 kerjakan
57         total ← total+rataRGB[i][j]
58 pixbow6 ← total / pembagi
59 Δ Mengambil nilai bag of words pixel citra untuk bow7
60 total ← 0
61 for i ← ulang1 sampai ulang2 - 1 kerjakan
62     for j ← ulang2 sampai ulang3 - 1 kerjakan
63         total ← total+rataRGB[i][j]
64 pixbow7 ← total / pembagi
65 Δ Mengambil nilai bag of words pixel citra untuk bow8
66 total ← 0
67 for i ← ulang1 sampai ulang2 - 1 kerjakan
68     for j ← ulang3 sampai ulang4 - 1 kerjakan
69         total ← total+rataRGB[i][j]
70 pixbow8 ← total / pembagi
71 Δ Mengambil nilai bag of words pixel citra untuk bow9
72 total ← 0
73 for i ← ulang2 sampai ulang3 - 1 kerjakan
74     for j ← 0 sampai ulang1 - 1 kerjakan
75         total ← total+rataRGB[i][j]
76 pixbow9 ← total / pembagi
77 Δ Mengambil nilai bag of words pixel citra untuk bow10
78 total ← 0
79 for i ← ulang2 sampai ulang3 - 1 kerjakan
80     for j ← ulang1 sampai ulang2 - 1 kerjakan
81         total ← total+rataRGB[i][j]
82 pixbow10 ← total / pembagi
83 Δ Mengambil nilai bag of words pixel citra untuk bow11
84 total ← 0
85 for i ← ulang2 sampai ulang3 - 1 kerjakan
86     for j ← ulang2 sampai ulang3 - 1 kerjakan
87         total ← total+rataRGB[i][j]
88 pixbow11 ← total / pembagi
89 Δ Mengambil nilai bag of words pixel citra untuk bow12
90 total ← 0
91 for i ← ulang2 sampai ulang3 - 1 kerjakan
92     for j ← ulang3 sampai ulang4 - 1 kerjakan
93         total ← total+rataRGB[i][j]
94 pixbow12 ← total / pembagi
95 Δ Mengambil nilai bag of words pixel citra untuk bow13
96 total ← 0
97 for i ← ulang3 sampai ulang4 - 1 kerjakan
98     for j ← 0 sampai ulang1 - 1 kerjakan

```

```

99         total ← total+rataRGB[i][j]
100 pixbow13 ← total / pembagi
101 Δ Mengambil nilai bag of words pixel citra untuk bow14
102 total ← 0
103 for i ← ulang3 sampai ulang4 - 1 kerjakan
104     for j ← ulang1 sampai ulang2 - 1 kerjakan
105         total ← total+rataRGB[i][j]
106 pixbow14 ← total / pembagi
107 Δ Mengambil nilai bag of words pixel citra untuk bow15
108 total ← 0
109 for i ← ulang3 sampai ulang4 - 1 kerjakan
110     for j ← ulang2 sampai ulang3 - 1 kerjakan
111         total ← total+rataRGB[i][j]
112 pixbow15 ← total / pembagi
113 Δ Mengambil nilai bag of words pixel citra untuk bow14
114 total ← 0
115 for i ← ulang3 sampai ulang4 - 1 kerjakan
116     for j ← ulang3 sampai ulang4 - 1 kerjakan
117         total ← total+rataRGB[i][j]
118 pixbow16 ← total / pembagi
119 return pixbow1, pixbow2, pixbow3, pixbow4, pixbow5, pixbow6, pixbow7,
    pixbow8, pixbow9, pixbow10, pixbow11, pixbow12, pixbow13, pixbow14,
    pixbow15, pixbow16.

```

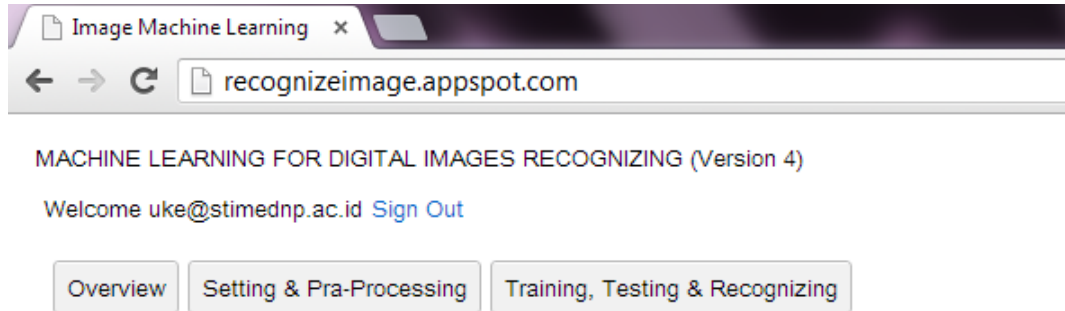
## Lampiran 5

### *Pseudocode* Konversi\_ARFF

```
Konversi_dataset_ke_ARFF(dataset_citra)
2  Δ membuat bagian header arff
3  FastVector classVal ← new FastVector()
4  classVal.addElement("yes")
5  classVal.addElement("no")
6  FastVector atts ← new FastVector()
7  atts.addElement(new Attribute("bow01"))
8  atts.addElement(new Attribute("bow02"))
9  atts.addElement(new Attribute("bow03"))
10 atts.addElement(new Attribute("bow04"))
11 atts.addElement(new Attribute("bow05"))
12 atts.addElement(new Attribute("bow06"))
13 atts.addElement(new Attribute("bow07"))
14 atts.addElement(new Attribute("bow08"))
15 atts.addElement(new Attribute("bow09"))
16 atts.addElement(new Attribute("bow10"))
17 atts.addElement(new Attribute("bow11"))
18 atts.addElement(new Attribute("bow12"))
19 atts.addElement(new Attribute("bow13"))
20 atts.addElement(new Attribute("bow14"))
21 atts.addElement(new Attribute("bow15"))
22 atts.addElement(new Attribute("bow16"))
23 atts.addElement(new Attribute("class",classVal))
24 Instances dataset_arff ← new Instances(relasi,atts,0)
25 Δ membuat bagian data arff
26 double[] attValues ← new double[dataset_arff.numAttributes()]
27 Ulangi sampai dataset_citra habis
28     attValues[0] ← dataset_citra.getBow01()
29     attValues[1] ← dataset_citra.getBow02()
30     attValues[2] ← dataset_citra.getBow03()
31     attValues[3] ← dataset_citra.getBow04()
32     attValues[4] ← dataset_citra.getBow05()
33     attValues[5] ← dataset_citra.getBow06()
34     attValues[6] ← dataset_citra.getBow07()
35     attValues[7] ← dataset_citra.getBow08()
36     attValues[8] ← dataset_citra.getBow09()
37     attValues[9] ← dataset_citra.getBow10()
38     attValues[10] ← dataset_citra.getBow11()
39     attValues[11] ← dataset_citra.getBow12()
40     attValues[12] ← dataset_citra.getBow13()
41     attValues[13] ← dataset_citra.getBow14()
42     attValues[14] ← dataset_citra.getBow15()
43     attValues[15] ← dataset_citra.getBow16()
44     attValues[16]← dataset_arff.attribute(16).
        indexOfValue(dataset_citra.getKelas())
45     dataset_arff.add(new Instance(1.0, attValues))
46 return dataset_arff
```

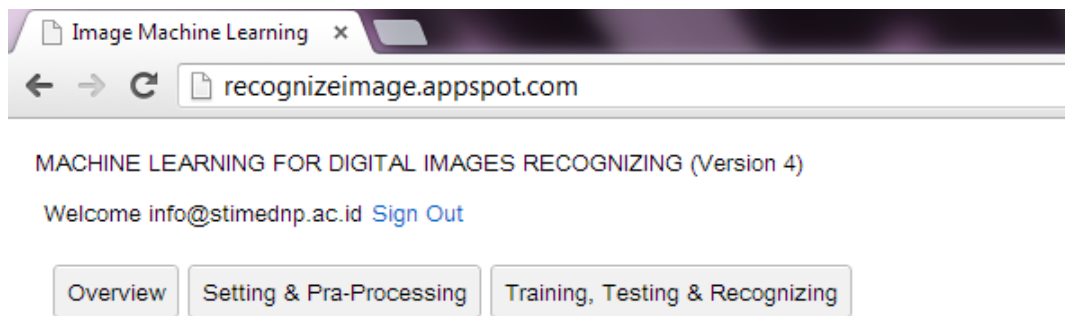
## Lampiran 6

### Tampilan 4 Pengguna Berhasil Login secara Bersamaan



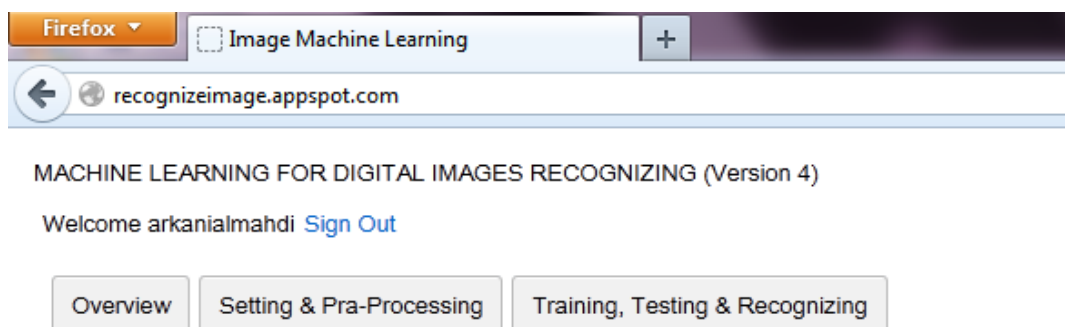
#### Digital Image Recognizing Machine Learning

This application uses some WEKA Machine Learning classification algorithms for training, testing :



#### Digital Image Recognizing Machine Learning

This application uses some WEKA Machine Learning classification algorithms for training, testing :



#### Digital Image Recognizing Machine Learning

This application uses some WEKA Machine Learning classification algorithms for training, testing :

## Lampiran 7

### Tampilan 4 Pengguna menggunakan Praproses





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Digital Images Data Setting & Pra-Processing

Relation :

Data for Training and Testing   Class :

No.	Image	BoW 01	BoW 02	BoW 03	BoW 04	BoW 05	BoW 06	BoW 07	BoW 08	BoW 09	BoW 10
1		221.44140625	224.26953125	228.18359375	213.32421875	212.2265625	160.3046875	181.16015625	204.03515625	197.08203125	169.8203125
2		189.828125	102.7109375	102.27734375	228.8203125	179.0703125	84.4296875	71.71875	143.7265625	179.69921875	92.171875
3		186.7734375	143.7421875	172.40234375	203.07421875	163.09765625	151.7890625	186.1015625	211.4609375	178.49609375	169.9140625
4		252.94921875	215.96875	192.4375	251.80859375	253.69921875	129.83984375	197.7421875	236.91796875	249.01953125	137.28515625





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Digital Images Data Setting & Pra-Processing

Relation :

Data for Training and Testing   Class :

No.	Image	BoW 01	BoW 02	BoW 03	BoW 04	BoW 05	BoW 06	BoW 07	BoW 08	BoW 09	BoW 10
1		89.6875	168.8515625	146.71484375	130.86328125	118.8359375	71.33203125	72.22265625	106.55859375	75.86328125	88.66796875
2		141.46875	134.34375	105.74609375	175.3515625	143.94921875	57.80078125	82.69921875	146.3203125	131.34765625	112.23046875
3		148.98828125	239.8203125	222.8359375	168.265625	148.55859375	131.03125	117.80078125	180.8515625	168.8046875	97.17578125
4		151.125	133.9375	163.06640625	128.27734375	145.953125	83.05078125	121.984375	137.40234375	165.5390625	113.37109375

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Digital Images Data Setting & Pra-Processing

Relation :  [Setting Relation](#)

Data for Training and Testing  [Choose File](#) No file chosen Class :  [Upload and Save Data](#)

No.	Image	BoW 01	BoW 02	BoW 03	BoW 04	BoW 05	BoW 06	BoW 07	BoW 08	BoW 09	BoW 10
1		224.34375	127.03125	131.33984375	231.5234375	162.109375	153.921875	139.03125	156.1328125	219.62109375	172.7639
2		179.3984375	135.359375	131.296875	207.69921875	171.82421875	122.7109375	134.85546875	71.3125	161.0234375	159.4882
3		137.77734375	83.68359375	68.35546875	109.65625	117.11328125	151.921875	195.44921875	55.1484375	136.33984375	182.6757
4		103.7265625	107.171875	89.26171875	89.8984375	111.171875	137.40625	183.8515625	61.0078125	81.828125	207.2929

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Digital Images Data Setting & Pra-Processing

Relation :  [Setting Relation](#)

Data for Training and Testing  [Telusuri...](#) Class :  [Upload and Save Data](#)

No.	Image	BoW 01	BoW 02	BoW 03	BoW 04	BoW 05	BoW 06	BoW 07	BoW 08	BoW 09	BoW 10
1		6.609375	87.2734375	69.00390625	4.81640625	37.05078125	88.84765625	98.421875	16.4453125	42.1015625	96.63671
2		140.69140625	150.359375	158.4375	141.6953125	161.01953125	138.828125	147.875	184.171875	138.00390625	138.0625
3		111.25390625	114.1875	119.5234375	111.75	100.84765625	101.91796875	107.55859375	128.9921875	47.28515625	94.10156
4		179.41796875	156.578125	167.2890625	183.30078125	190.78125	69.48828125	109.9453125	206.66796875	155.12890625	128.3007

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## Lampiran 8

### Tampilan 4 Pengguna menggunakan Pengenalan, Pengujian dan Pengenalan Citra Digital

#### Pelatihan dan Pengujian Algoritma Support Vector Machine

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Overview

Setting & Pra-Processing

Training, Testing & Recognizing

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
5 5 | a = yes
2 8 | b = no
```

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Overview

Setting & Pra-Processing

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 55.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
1 9 | a = yes
0 10 | b = no
```



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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
3 7 | a = yes
0 10 | b = no
```

MACHINE LEARNING FOR DIGITAL IMAGES RECOGNIZING (Version 4)

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 60.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
2 8 | a = yes
0 10 | b = no
```

## Pelatihan dan Pengujian Algoritma Naïve Bayes

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 80.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
8 2 | a = yes
2 8 | b = no
```

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Overview

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 75.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
7 3 | a = yes
2 8 | b = no
```

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 45.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
2 8 | a = yes
3 7 | b = no
```

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 50.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
5 5 | a = yes
5 5 | b = no
```

## Pelatihan dan Pengujian Algoritma C4.5 Decision Tree

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Relation : sahrulface

ML Algorithms C4.5 Decision Tree

Percentage Split (%) 60

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 80.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
7 3 | a = yes
1 9 | b = no
```

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Relation : cup

ML Algorithms C4.5 Decision Tree

Percentage Split (%) 60

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
6 4 | a = yes
2 8 | b = no
```

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 60.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
6 4 | a = yes
4 6 | b = no
```

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 75.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
9 1 | a = yes
4 6 | b = no
```

## Pelatihan dan Pengujian Algoritma K-Nearest Neighbours

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
6 4 | a = yes
3 7 | b = no
```

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
4 6 | a = yes
1 9 | b = no
```

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Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
6 4 | a = yes
3 7 | b = no
```

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 60.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
5 5 | a = yes
3 7 | b = no
```

## Pelatihan dan Pengujian Algoritma Logistic Regression

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 95.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
9 1 | a = yes
0 10 | b = no
```

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Overview

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 50.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
7 3 | a = yes
7 3 | b = no
```



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Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
5 5 | a = yes
2 8 | b = no
```

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
9 1 | a = yes
5 5 | b = no
```

## Pelatihan dan Pengujian Algoritma Random Forest

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
9 1 | a = yes
6 4 | b = no
```

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %
```

=== Confusion Matrix ===

```
a b <- classified as
5 5 | a = yes
1 9 | b = no
```

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Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %

=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
2 8 | b = no
```

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
8 2 | a = yes
5 5 | b = no
```

## Pengenalan citra digital secara *multiuser*

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Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 95.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
9 1 | a = yes
0 10 | b = no
```

[Use The Result of Train Model for Recognize Images](#)

Upload & Recognizing Digital Images

No.	Digital Image	Recognizing Result
1		is it sahrulface ? yes
2		is it sahrulface ? no

[Choose File](#) No file chosen

[Recognizing](#)

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Overview

Setting & Pra-Processing

Training, Testing & Recognizing

### Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 75.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
7 3 | a = yes
2 8 | b = no
```

Use The Result of Train Model for Recognize Images

Upload & Recognizing Digital Images

No.	Digital Image	Recognizing Result
1		is it cup ? no
2		is it cup ? yes

Choose File No file chosen

Recognizing

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- Overview
- Setting & Pra-Processing
- Training, Testing & Recognizing

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation : butterfly

ML Algorithms Random Forest

Percentage Split (%) 60

Training and Testing

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %



=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
2 8 | b = no
```

Use The Result of Train Model for Recognize Images

Upload & Recognizing Digital Images

butterfly Random Forest

No.	Digital Image	Recognizing Result
1		is it butterfly ? yes
2		is it butterfly ? no

Choose File No file chosen

Recognizing

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### Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

[Training and Testing](#)

#### Learning & Testing Result :



```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 75.0 %
```

=== Confusion Matrix ===

```
a b <-- classified as
9 1 | a = yes
4 6 | b = no
```

[Use The Result of Train Model for Recognize Images](#)

### Upload & Recognizing Digital Images

No.	Digital Image	Recognizing Result
1		is it sunflower ? yes
2		is it sunflower ? no

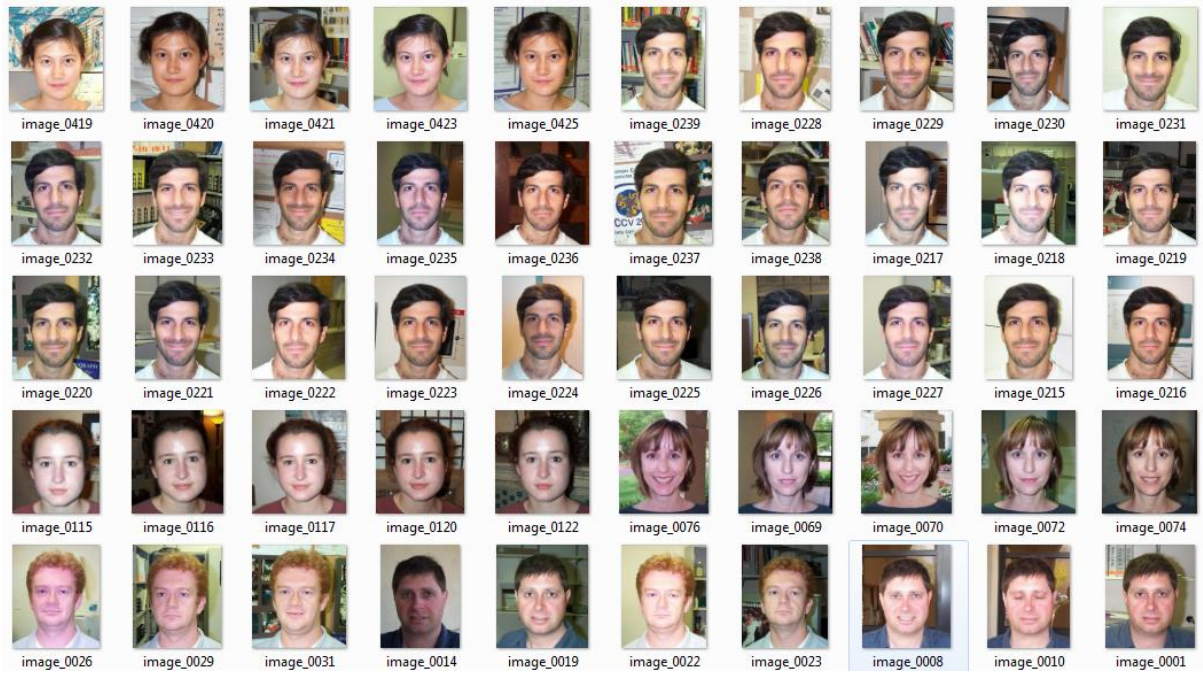
[Choose File](#) No file chosen

[Recognizing](#)

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## Lampiran 9

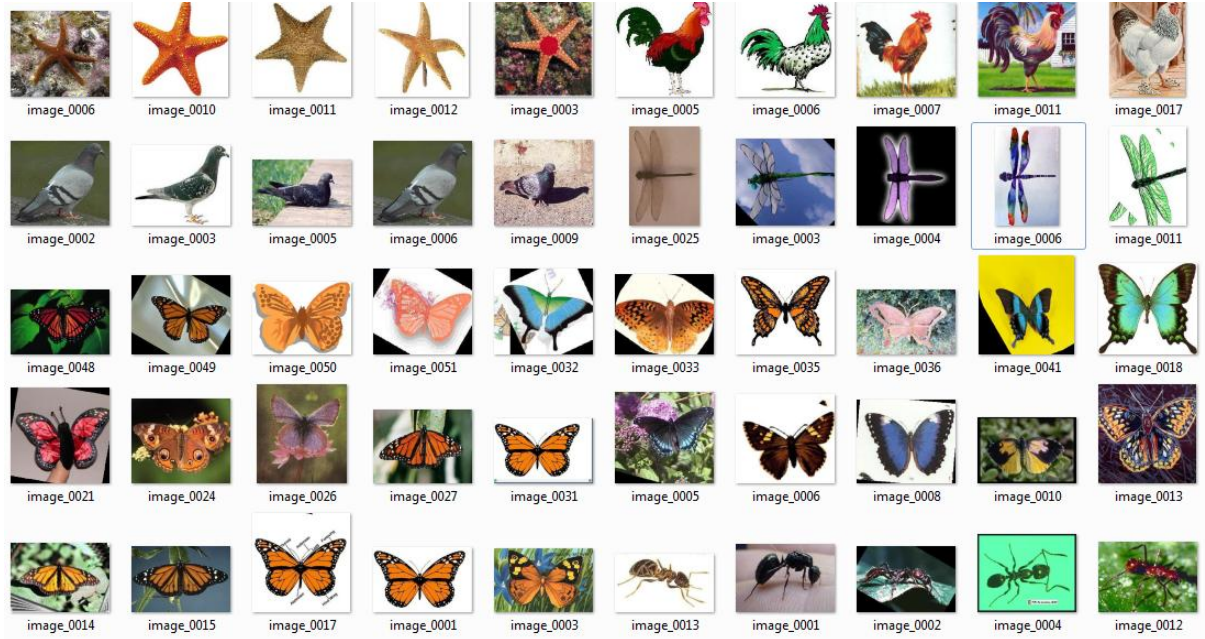
### Data set Citra Wajah





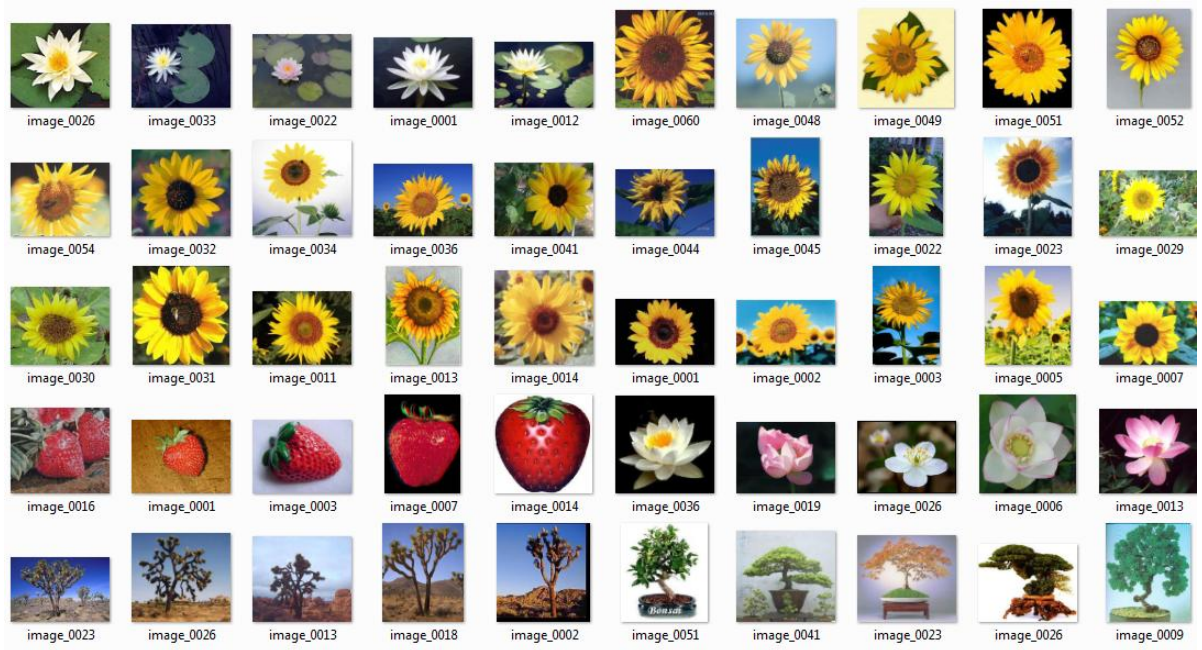
## Lampiran 10

### Data set Citra Kupu-kupu



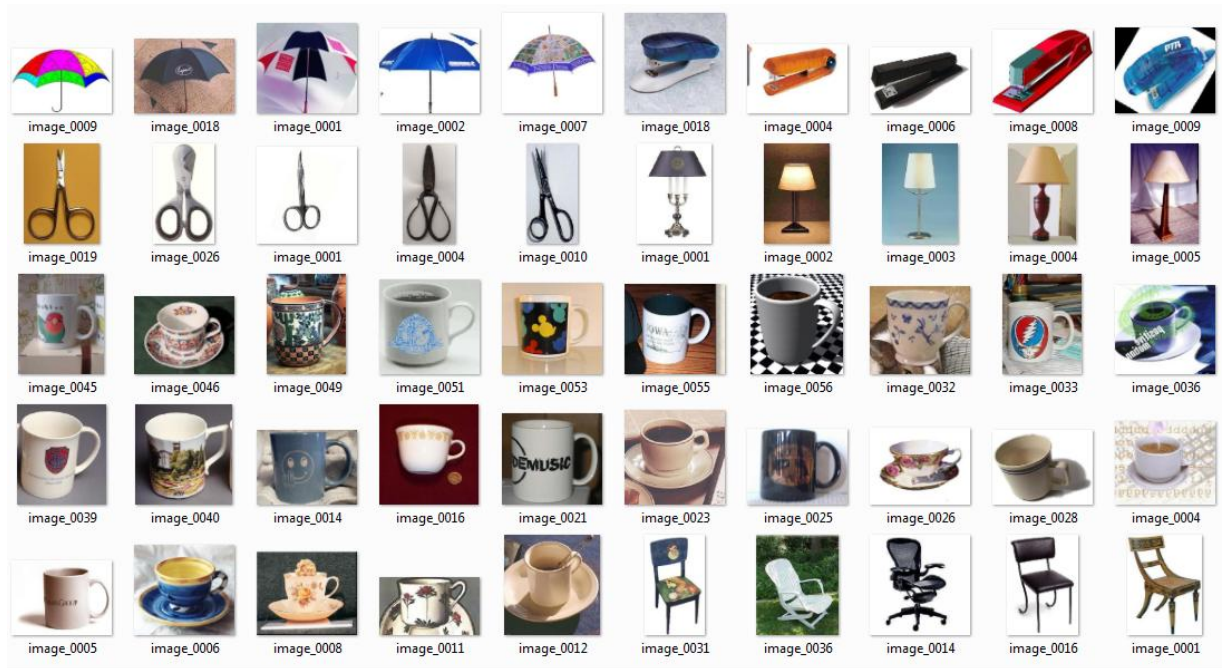
# Lampiran 11

## Data set Citra Bunga Matahari



## Lampiran 12

### Data set Citra Cangkir



## Lampiran 13 Tampilan Hasil Pengujian Pengenalan Citra Wajah

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
5 5 | a = yes
2 8 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 80.0 %

=== Confusion Matrix ===

a b <-- classified as
8 2 | a = yes
2 8 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 80.0 %

=== Confusion Matrix ===

a b <-- classified as
7 3 | a = yes
1 9 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
3 7 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 95.0 %

=== Confusion Matrix ===

a b <-- classified as
9 1 | a = yes
0 10 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
9 1 | a = yes
6 4 | b = no
```

## Lampiran 14 Tampilan Hasil Pengujian Pengenalan Citra Kupu-kupu

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
3 7 | a = yes
0 10 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 45.0 %

=== Confusion Matrix ===

a b <-- classified as
2 8 | a = yes
3 7 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 60.0 %

=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
4 6 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
3 7 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
5 5 | a = yes
2 8 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %

=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
2 8 | b = no
```

## Lampiran 15 Tampilan Hasil Pengujian Pengenalan Citra Bunga Matahari

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 60.0 %

=== Confusion Matrix ===

a b <-- classified as
2 8 | a = yes
0 10 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 50.0 %

=== Confusion Matrix ===

a b <-- classified as
5 5 | a = yes
5 5 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 75.0 %

=== Confusion Matrix ===

a b <-- classified as
9 1 | a = yes
4 6 | b = no
```



Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 60.0 %

=== Confusion Matrix ===

a b <-- classified as
5 5 | a = yes
3 7 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %

=== Confusion Matrix ===

a b <-- classified as
9 1 | a = yes
5 5 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
8 2 | a = yes
5 5 | b = no
```

## Lampiran 16 Tampilan Hasil Pengujian Pengenalan Citra Cangkir

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 55.0 %

=== Confusion Matrix ===

a b <-- classified as
1 9 | a = yes
0 10 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 75.0 %

=== Confusion Matrix ===

a b <-- classified as
7 3 | a = yes
2 8 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %

=== Confusion Matrix ===

a b <-- classified as
6 4 | a = yes
2 8 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 65.0 %

=== Confusion Matrix ===

a b <-- classified as
4 6 | a = yes
1 9 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 50.0 %

=== Confusion Matrix ===

a b <-- classified as
7 3 | a = yes
7 3 | b = no
```

Training, Testing & Recognizing Digital Images using Machine Learning Algorithms

Relation :

ML Algorithms

Percentage Split (%)

Learning & Testing Result :

```
Train Instances = 30 || Test Instances = 20
Time taken to build the model = 0.0 seconds
Correctly classified = 70.0 %

=== Confusion Matrix ===

a b <-- classified as
5 5 | a = yes
1 9 | b = no
```