

LAMPIRAN

LAMPIRAN-1. Citra Input Fase Training

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LAMPIRAN-2. Kode Program

```
Dim i, j, k, M, N, N1 As Integer
Dim Paint As Boolean
Dim xx, yy As Single
Dim Data(500, 500), DataCrop(500, 500), DataCrop2(500, 500),
    DataCrop3(500, 500) As Long
Private Declare Function SetPixelV Lib "gdi32" (ByVal hdc As Long,
ByVal X As Long, ByVal Y As Long, ByVal crColor As Long) As Long
Private Declare Function GetPixel Lib "gdi32" (ByVal hdc As Long,
ByVal X As Long, ByVal Y As Long) As Long
Dim BrsA, KlmA, KlmB, Panjang, BrsAorig, BrsA2, KlmA2, KlmB2,
BrsA3, KlmA3, KlmB3 As Integer

Private Sub cmdBaca_Click()
    Picture1.ScaleMode = 3
    Picture1.AutoSize = True

    N = Picture1.ScaleHeight
    M = Picture1.ScaleWidth

    For i = 0 To M - 1
        For j = 0 To N - 1
            Data(i, j) = GetPixel(Picture1.hdc, i, j)
            Data(i, j) = Data(i, j) Mod 256
            If Data(i, j) < 0 Then
                Data(i, j) = -1 * Data(i, j)
            End If
        Next j
    Next i
End Sub

Private Sub cmdCropKolom_Click()
    For i = 0 To M - 1
        For j = 0 To (KlmB - KlmA) - 1
            Next j
            Call SavePicture(Me.Picture3.Image,
                "d:\proglitlokal\image3\tulisan3.tif")
            Me.Picture3.AutoRedraw = True
            Me.Picture3.Picture =
                LoadPicture("d:\proglitlokal\image3\tulisan3.tif")

            For j = 0 To (KlmB2 - KlmA2) - 1
                Next j
                Call SavePicture(Me.Picture4.Image,
                    "d:\proglitlokal\image3\tulisan3-1.tif")
                Me.Picture4.AutoRedraw = True
                Me.Picture4.Picture =
                    LoadPicture("d:\proglitlokal\image3\tulisan3-1.tif")

            For j = 0 To (KlmB3 - KlmA3) - 1
                Next j
                Call SavePicture(Me.Picture5.Image,
                    "d:\proglitlokal\image3\tulisan3-2.tif")
                Me.Picture5.AutoRedraw = True
            End For
        Next i
    End Sub
```

```

        Me.Picture5.Picture =
            LoadPicture("d:\proglitlokal\image3\tulisan3-2.tif")

    Next i

End Sub

Private Sub cmdSegmen_Click()
    Dim hitam As String

    For i = 0 To N - 1
        For j = 0 To M - 1
            If Data(j, i) = 0 Then
                KlmA = i
                BrsA = j
                GoTo Keluar1
            End If
        Next j
    Next i
Keluar1:
    Text3 = KlmA
    For j = KlmA To N - 1 Step 10
        hitam = "N"
        For i = 1 To M - 1
            If Data(i, j) = 0 Then
                hitam = "Y"
            End If
        Next i
        If hitam = "N" Then
            KlmB = j
            GoTo Keluar2
        End If
    Next j
Keluar2:

    Panjang = KlmB - KlmA
    'Panjang = Panjang + Round((Panjang / 2))
    KlmB = KlmA + Panjang
    Text5 = KlmB

    For i = 0 To M - 1
        For j = 0 To N - 1
            DataCrop(i, j) = 255
        Next j
    Next i

    For i = 0 To M - 1
        For j = KlmA To KlmB
            DataCrop(i, j - KlmA) = Data(i, j)
        Next j
    Next i

    Picture2.AutoSize = True
    Picture2.ScaleMode = 3
    Picture2.Cls

```

```

For i = 0 To M - 1
  For j = 0 To N - 1
    If (j = KlmA) Or (j = KlmB) Then
      SetPixelV Picture2.hdc, j, i, (RGB(0, 0, 255))
    Else
      SetPixelV Picture2.hdc, j, i, (RGB(Data(i, j),
      Data(i, j), Data(i, j)))
    End If
  Next j
Next i

'--- end of cropping by row I

'-----
'segment brs II
For i = KlmB + 1 To N - 1
  For j = 0 To M - 1
    If Data(j, i) = 0 Then
      KlmA2 = i
      BrsA2 = j
      GoTo Keluar3
    End If
  Next j
Next i
Keluar3:
Text3 = KlmA2
For j = KlmA2 To N - 1 Step 10
  hitam = "N"
  For i = 1 To M - 1
    If Data(i, j) = 0 Then
      hitam = "Y"
    End If
  Next i
  If hitam = "N" Then
    KlmB2 = j
    Text4 = KlmB2
    GoTo Keluar4
  End If
Next j
Keluar4:

Panjang = KlmB2 - KlmA2
KlmB2 = KlmA2 + Panjang
Text5 = KlmB2

For i = 0 To M - 1
  For j = 0 To N - 1
    DataCrop2(i, j) = 255
  Next j
Next i

For i = 0 To M - 1
  For j = KlmA2 To KlmB2

```

```

        DataCrop2(i, j - KlmA2) = Data(i, j)
    Next j
Next i

For i = 0 To M - 1
    For j = 0 To N - 1
        If (j = KlmA2) Or (j = KlmB2) Then
            SetPixelV Picture2.hdc, j, i, (RGB(0, 0, 255))
        End If
    Next j
Next i

'-----
'segment brs III
For i = KlmB2 + 1 To N - 1
    For j = 0 To M - 1
        If Data(j, i) = 0 Then
            KlmA3 = i
            BrsA3 = j
            GoTo Keluar5
        End If
    Next j
Next i
Keluar5:
Text3 = KlmA3
For j = KlmA3 To N - 1 Step 10
    hitam = "N"
    For i = 1 To M - 1
        If Data(i, j) = 0 Then
            hitam = "Y"
        End If
    Next i
    If hitam = "N" Then
        KlmB3 = j
        Text4 = KlmB3
        GoTo Keluar6
    End If
Next j
Keluar6:

Panjang = KlmB3 - KlmA3
KlmB3 = KlmA3 + Panjang
Text5 = KlmB3

For i = 0 To M - 1
    For j = 0 To N - 1
        DataCrop3(i, j) = 255
    Next j
Next i

For i = 0 To M - 1
    For j = KlmA3 To KlmB3
        DataCrop3(i, j - KlmA3) = Data(i, j)
    Next j
Next i

```

```

For i = 0 To M - 1
  For j = 0 To N - 1
    If (j = KlmA3) Or (j = KlMB3) Then
      SetPixelV Picture2.hdc, j, i, (RGB(0, 0, 255))
    End If
  Next j
Next i

```

End Sub

```
Private Sub cmdCrop_Click()
```

```

For i = 0 To M - 1
  For j = 0 To (KlMB - KlmA) - 1
    SetPixelV Picture3.hdc, j, i, (RGB(DataCrop(i, j),
      DataCrop(i, j), DataCrop(i, j)))
    SetPixelV Picture4.hdc, j, i, (RGB(DataCrop2(i, j),
      DataCrop2(i, j), DataCrop2(i, j)))
    SetPixelV Picture5.hdc, j, i, (RGB(DataCrop3(i, j),
      DataCrop3(i, j), DataCrop3(i, j)))
  Next j
  Call SavePicture(Me.Picture3.Image,
    "d:\proglitlokal\image3\tulisan2.jpg")
  Me.Picture3.AutoRedraw = True
  Me.Picture3.Picture =
    LoadPicture("d:\proglitlokal\image3\tulisan2.jpg")

  Call SavePicture(Me.Picture4.Image,
    "d:\proglitlokal\image3\tulisan2-1.jpg")
  Me.Picture4.AutoRedraw = True
  Me.Picture4.Picture =
    LoadPicture("d:\proglitlokal\image3\tulisan2-1.jpg")

  Call SavePicture(Me.Picture5.Image,
    "d:\proglitlokal\image3\tulisan2-2.jpg")
  Me.Picture5.AutoRedraw = True
  Me.Picture5.Picture =
    LoadPicture("d:\proglitlokal\image3\tulisan2-2.jpg")
Next i

```

End Sub

```
Private Sub cmdTampil_Click()
Dim DataTemp(500, 500) As Long
```

```

For i = 0 To M - 1
  For j = 0 To N - 1
    If Data(i, j) < 210 Then
      Data(i, j) = 0
    Else
      Data(i, j) = 255
    End If
  Next j
Next i

```



```

'change position bot to top
For i = 0 To M - 1
    k = (M - 1) - i
    For j = 0 To N - 1
        DataTemp(i, j) = Data(k, j)
    Next j
Next i
For i = 0 To M - 1
    For j = 0 To N - 1
        Data(i, j) = DataTemp(i, j)
    Next j
Next i

Picture2.AutoSize = True
Picture2.ScaleMode = 3
Picture2.Cls
For i = 0 To M - 1
    For j = 0 To N - 1
        SetPixelV Picture2.hdc, j, i, (RGB(Data(i, j), Data(i,
j)), Data(i, j)))
    Next j
Next i
End Sub

Private Sub Picture3_MouseDown(Button As Integer, Shift As Integer,
X As Single, Y As Single)

    xx = X
    yy = Y
    Paint = True
End Sub

Private Sub Picture3_MouseMove(Button As Integer, Shift As Integer,
X As Single, Y As Single)
    If Paint Then
        Picture3.Line (xx, yy)-(xx + 600, yy), RGB(0, 0, 255)
        Picture3.Line (xx - 600, yy)-(xx, yy), RGB(0, 0, 255)
    End If
End Sub

Private Sub Picture3_MouseUp(Button As Integer, Shift As Integer,
X As Single, Y As Single)
    Paint = False
End Sub

Private Sub Picture4_MouseDown(Button As Integer, Shift As Integer,
X As Single, Y As Single)

    xx = X
    yy = Y
    Paint = True
End Sub

```

```

Private Sub Picture4_MouseMove(Button As Integer, Shift As Integer,
X As Single, Y As Single)
    If Paint Then
        Picture4.Line (xx, yy)-(xx + 600, yy), RGB(0, 0, 255)
        Picture4.Line (xx - 600, yy)-(xx, yy), RGB(0, 0, 255)
    End If
End Sub

```

```

Private Sub Picture4_MouseUp(Button As Integer, Shift As Integer,
X As Single, Y As Single)
    Paint = False
End Sub

```

```

Private Sub Picture5_MouseDown(Button As Integer, Shift As Integer,
X As Single, Y As Single)

    xx = X
    yy = Y
    Paint = True
End Sub

```

```

Private Sub Picture5_MouseMove(Button As Integer, Shift As Integer,
X As Single, Y As Single)
    If Paint Then
        Picture5.Line (xx, yy)-(xx + 600, yy), RGB(0, 0, 255)
        Picture5.Line (xx - 600, yy)-(xx, yy), RGB(0, 0, 255)
    End If
End Sub

```

```

Private Sub Picture5_MouseUp(Button As Integer, Shift As Integer,
X As Single, Y As Single)
    Paint = False
End Sub

```

Kode Fungsi segmenKolom.m

```

cropbaris=imread('d:\proglitlokal\image3\tulisan3.tif');
cropbrs=rgb2gray(cropbaris);

[B,K]=size(cropbrs);

%determine number of lines
baris=0;
hit=0;
awal=0;
for i=2:B,
    for j=1:K,
        if cropbrs(i,j)==29
            baris=i;
            if awal==0
                awal=baris
            end
        end
    end
end

```

```

        end
        hit=hit+1;
        flag(hit)=baris;
        break
    end
end
end

hit
%cropping column
x=0;
for l=1:hit-1,
    for i=flag(l)+1:flag(l+1)-1,
        if flag(l)+1==flag(l+1)-1
            for j=1:K,
                x=i-flag(l);
                cropkolom(x,j)=255;
            end
        else
            for j=1:K,
                x=i-flag(l);
                cropkolom(x,j)=cropbrs(i,j);
            end
        end
    end
    %change size and reflect
    if x<32
        for i=x+1:32,
            for j=1:K,
                cropkolom(i,j)=255;
            end
        end
    end
    if K>32
        for i=1:32,
            for j=1:32,
                crophuruf(i,j)=cropkolom(i,j);
            end
        end
    end
    crophuruf=crophuruf';
    for i=1:32,
        for j=1:32
            crophuruf1(i,j)=crophuruf(i,33-j);
        end
    end
end

%---

%--recognize
bentukkenal;
eucl
%if l==30
% break
%end

```

```

%--reset
for i=1:32,
    for j=1:32
        cropkolom(i,j)=255;
    end
end
end

```

Kode Fungsi bentukKenal.m

```

databaru=crophuruf1;

%get dimension of data
[M,N]=size(databaru);

for i=1:M,
    for j=1:N,
        if databaru(i,j)>200
            databaru(i,j)=255;
        else
            databaru(i,j)=0;
        end
    end
end

%change dimension to 1xN^2
k=0;
for i=1:M,
    for j=1:N,
        k=k+1;
        datakenal(1,k)=databaru(i,j);
    end
end

datakenal=datakenal';
[M,N]=size(datakenal);
datakenal=double(datakenal) - repmat(mn,1,N);

imageLetter=PC'*datakenal;

```

Kode Fungsi PCA.m

```

[M,N]=size(data);
mn=mean(data,2);
data=double(data) - repmat(mn,1,N);

%calculate covariance
covariance=1/(N-1)*data*data';

%find eigenvectors and eigenvalues
[PC,V]=eig(covariance);

```

```

%extract diagonal of matrix as vector
V=diag(V);

%sort the variances in decreasing order
[junk, rindices]=sort(-1*V);
V=V(rindices);
PC=PC(:,rindices);

eigenLetter=PC'*data;

```

Kode Fungsi Eucl.m

```

for i=1:111,
    Jarak(1,i)=0;
end

for i=1:1024,
    for j=1:111,
        Hasil(i,j)=eigenLetter(i,j)-imageLetter(i,1);
    end
end

for h=1:111,
    for i=1:1024,
        Jarak(1,h)=Jarak(1,h)+(Hasil(i,h)*Hasil(i,h));
    end
    Jarak2(1,h)=sqrt(Jarak(1,h));
end
Jarak2;

Kecil=Jarak2(1,1);
ke=0;
for i=1:111,
    if Jarak2(1,i)<=Kecil
        Kecil=Jarak2(1,i);
        ke=i;
    end
end
ED=Kecil
ke

```