

**LAMPIRAN  
LISTING PROGRAM**

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% %%Program Utama
tiga=imread('asal.gif');
tiga1=double(tiga);
x=tiga1;

N=size(x,1); P=size(x,2); M=N;
spherex;
xx=inv(wz)*x;

w=eye(N); count=0; perm=randperm(P); sweep=0; Id=eye(M);
oldw=w; olddelta=ones(1,N*M); angle=1000; change=1000;

B=50; L=0.0006; F=5000;

for I=1:500
    sep96;
end;

% B=50; L=0.0003; F=5000;
%
% for I=1:200
%     sep96;
% end;
%
% B=50; L=0.0002; F=5000;
%
% for I=1:200
%     sep96;
% end;
%
% B=50; L=0.0001; F=5000;
%
% for I=1:200
%     sep96;
% end;

uu=w*wz*xx;
cov(uu') ;

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% spherex

fprintf('\nsubtracting mean\n');
mx=mean(x');
x=x-(ones(P,1)*mx)';
fprintf('calculating whitening filter\n');
c=cov(x');
wz=2*inv(sqrtm(c));
fprintf('whitening\n');
x=wz*x;

% sep96
x=x(:,perm);
sweep=sweep+1; t=1;
noblocks=fix(P/B);
BI=B*Id;
for t=t:B:t-1+noblocks*B,
    count=count+B;
    u=w*x(:,t:t+B-1);
    w=w+L*(BI+(1-2*(1./(1+exp(-u))))*u)*w;
    if count>F
        sepout;
        count=count-F;
    end;
end;

% sepout
[change,olddelta,angle]=wchange(oldw,w,olddelta);
oldw=w;
fprintf('***sweep=%d, change=%.4f angle=%.1f deg.,
[N%d,M%d,P%d,B%d,L%.5f]\n',...
    sweep,change,180*angle/pi,N,M,P,B,L);

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%%% proses crop gambar
LabelDir = 'C:\Documents and Settings\HOVA\Desktop\ICA\program\Program Asal\'
imgDir = 'C:\Documents and Settings\HOVA\Desktop\ICA\program\Program
asal\Sumber\'
destdir = 'C:\Documents and Settings\HOVA\Desktop\ICA\program\Program asal\Hasil\'

homeDir = pwd;

XSIZE = 240; YSIZE = 292;
EYES = 130;
TEETH_EYES = 165;

    cd (destdir)
    load Labels
    cd (imgDir)
    r = dir;

for i = 4:(size(r,1))
    imgName = r(i).name
    % [X,map] = imread([ t ]);
    I=imread(imgName);
    I=rgb2gray(I);

    [height, width] = size(I);
    dxeyes = marks(i-2,3) - marks(i-2,1); %Check these.
    dyeyes = marks (i-2,4) - marks(i-2,2);
    dEeyes = sqrt(dxeyes^2 + dyeyes^2);
    mean_eye_x = mean([marks(i-2,1), marks(i-2,3)]);
    mean_eye_y = mean([marks(i-2,2), marks(i-2,4)]);
    dTeeth_eyes = sqrt((marks(i-2,5)-mean_eye_x)^2 + (marks(i-2,6)-mean_eye_y)^2);

    %scale
    yscale = TEETH_EYES / dTeeth_eyes; xscale = EYES / dEeyes;
    height_new = yscale*height; width_new = xscale*width;
    tmp0=imresize(I,[height_new,width_new],'bicubic');

    Reye_x = marks(i-2,1);
    Reye_y = marks(i-2,2);

    W = 500;
    padcols = zeros(size(tmp0,1),W); padrows = zeros(W,size(tmp0,2)+W);
    padcols = uint8(padcols); padrows=uint8(padrows);
    tmp = [padrows;padcols,tmp0];

    tmpx = xscale*Reye_x - W +W; tmpy = yscale*Reye_y - W +W;
    tmp1 = imcrop(tmp,[tmpx,tmpy,2*W,2*W]);

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%figure(2);imshow(tmp1)

angle = 180/pi*atan((yscale*dyeyes)/(xscale*dxeyes));
tmp2 = imrotate(tmp1,angle,'bicubic','crop');
%figure(2); imshow(tmp2);

x = W - (XSIZE-EYES)/2;
%y = W - YSIZE/2;
y = W - YSIZE*1/3;
tmp3=imcrop(tmp2,[x,y,XSIZE,YSIZE]);
figure(1); imshow(tmp3);

% save
[imgName, R] = strtok(imgName, '.');
fname = [destdir,imgName, '.pgm'];
imwrite(tmp3,fname,'pgm')
end
```

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%%%proses penandaan bagian wajah
imgdir = 'C:\Documents and Settings\HOVA\Desktop\ICA\program\Program
asal\Sumber\'
destdir = 'C:\Documents and Settings\HOVA\Desktop\ICA\program\Program asal\Hasil\'

cd (imgdir);
r = dir;

marks = [];
for i = 4:(size(r,1))
    t = r(i).name
    [X,map] = imread([ t ]);

    figure(1)
    colormap gray;
    if isfloat(X)
        image(gray2ind(mat2gray((X))));
    else
        image(X);
    end
    title(t);
    disp 'Click subjects right eye, left eye, then mouth.'
    [m,n] = ginput(3); pos = round([m,n]);
    pos = reshape(pos',1,6);
    marks = [marks; pos];
end

cd (destdir)
save Labels marks r

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% % %proses klasifikasi
function [testPerf,rankmat,rank] = nnclassFn(train,test,trainClass,answer);

numTest = size(test,2);
numTrain = size(train,2);

dists=-1 * cosFn(test,train);

[Sdist,nearest] = sort(dists');

Nnbr = nearest(1,:);
testClass = trainClass(Nnbr);

correct = find( (testClass - answer == 0));
testPerf = size(correct,1) / size(answer,1)
if(size(correct,2)>size(correct,1))
    testPerf = size(correct,2) / size(answer,2)
    'check vector orientation'
end

cumtestPerf=0;
for i = 1:30
    rankmat(:,i) = trainClass(nearest(i,:));
    correcti = find( (rankmat(:,i) - answer == 0));
    cumtestPerf = cumtestPerf + size(correcti,1) / size(answer,1);
    rank(i) = cumtestPerf;
end

% % %fungsi cosinus
function [S] = cosFn(mat1,mat2),

denom = sum(mat1.^2,1)*sum(mat2'.^2,2);
denom (find(denom==0)) = 0.000000000000000000000001;
numer = mat1'*mat2;

S = numer./denom;

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