**MATLAB code for Mood identification from facial expression**

clear

clc

% Load templates and input image

template\_happy = imread('template\_happy.jpg');

template\_sad = imread('template\_sad.jpg');

input\_img = imread(['input1.jpg']);

% Resize templates and input image

template\_happy = imresize(template\_happy, [400, 300]);

template\_sad = imresize(template\_sad, [400, 300]);

input\_img = imresize(input\_img, [400, 300]);

% Convert templates to grayscale

template\_happy\_gray = rgb2gray(template\_happy);

template\_sad\_gray = rgb2gray(template\_sad);

% Convert input image to grayscale

img\_gray = rgb2gray(input\_img);

img\_blurred = imgaussfilt(img\_gray, 2);

edges = edge(img\_blurred, 'canny');

% Use template matching for happy template

corr\_result\_happy = normxcorr2(template\_happy\_gray, img\_gray);

[y\_peak\_happy, x\_peak\_happy] = find(corr\_result\_happy == max(corr\_result\_happy(:)));

% Use template matching for sad template

corr\_result\_sad = normxcorr2(template\_sad\_gray, img\_gray);

[y\_peak\_sad, x\_peak\_sad] = find(corr\_result\_sad == max(corr\_result\_sad(:)));

% Display templates and input image

figure;

subplot(1,3,1);

imshow(template\_happy);

title('Happy Template');

subplot(1,3,2);

imshow(template\_sad);

title('Sad Template');

subplot(1,3,3);

imshow(input\_img);

title('Input Image');

% Convert input image to binary

binary\_img = imbinarize(img\_gray, 'adaptive'); % thresholding method

% Use regionprops for further processing

stats = regionprops(binary\_img, 'Area', 'Centroid', 'BoundingBox');

% Determine emotion based on the highest correlation result and region properties

threshold\_happy = 0.4; % Adjust as needed

threshold\_sad = 0.8; % Adjust as needed

if max(corr\_result\_happy(:)) > threshold\_happy && max(corr\_result\_happy(:)) > max(corr\_result\_sad(:)) && max([stats.Area]) > threshold\_happy

disp('Happy expression detected!');

elseif max(corr\_result\_sad(:)) > threshold\_sad && max(corr\_result\_sad(:)) > max(corr\_result\_happy(:)) && max([stats.Area]) > threshold\_sad

disp('Sad expression detected');

else

disp('Uncertain mood');

end