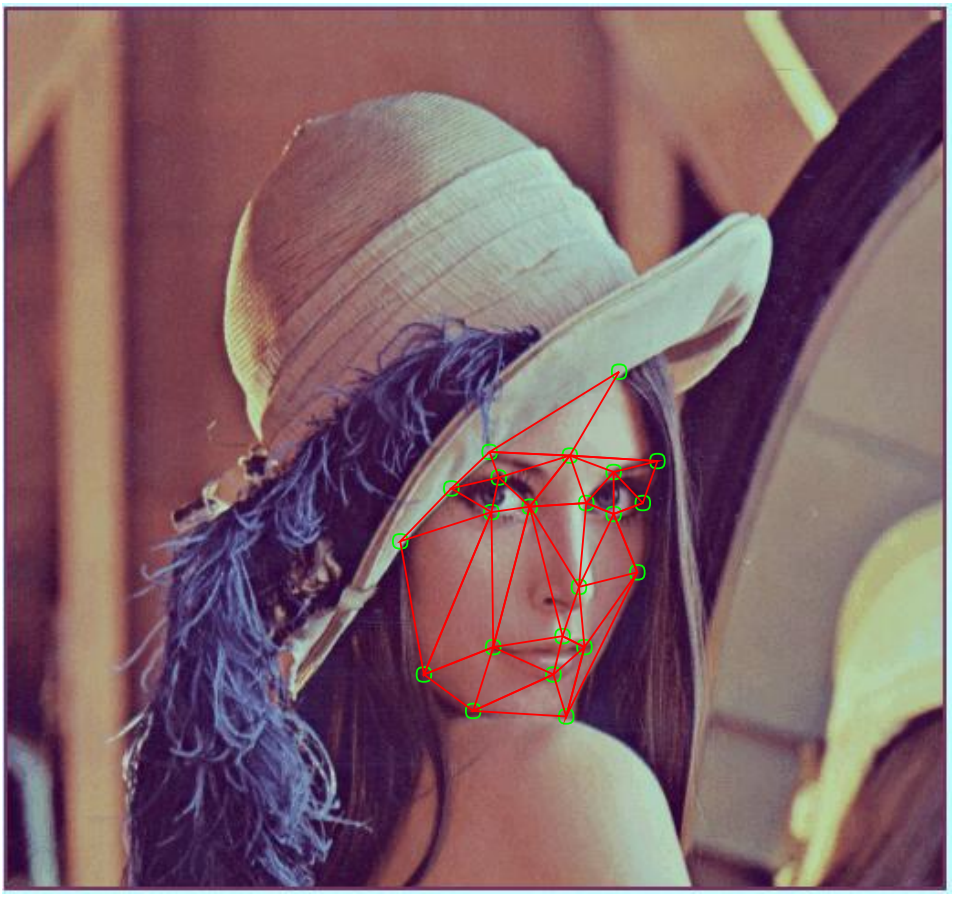
Sirajul Salekin
Wyj671

Original Lena image with triangular mesh:

Original Image



Sirajul Salekin
Wyj671

Smiling Lena:

Lena Happy

Sirajul Salekin
Wyj671

Lena is upset:

Lena Upset

Sirajul Salekin
Wyj671

Lena is angry:

I tried to make Lena look like angry by manipulating the eyes wide open and at the same time the lips are sealed tightly due to anger.

Lena Angry

Sirajul Salekin
Wyj671

Lena Feeling Sleepy:

Here, Lena has a sleepy facial expression, which is done by removing her natural smiley expression and making her eyes small due to sleep.

Lena Feeling Sleepy

Sirajul Salekin
Wyj671

Matlab Code:

```
clc
close all
clear all
f_pt = importdata('position_triangle.txt');
tri_pt = importdata('triangle_points.txt');

%dis_pt = importdata('displacement_happy.txt');
%dis_pt = importdata('displacement_upset.txt');
%dis_pt = importdata('displacement_angry.txt');
dis_pt = importdata('displacement_sleepy.txt');

rgbimg = imread('lena.tiff');
warpimg = rgbimg;
figure(1)
imshow(rgbimg);
title('Original Image')
hold on

for i = 1:22
plot(f_pt(i,1),f_pt(i,2),'go');
end

for jj = 1:32
    plot([f_pt(tri_pt(jj,1),1) f_pt(tri_pt(jj,2),1) f_pt(tri_pt(jj,3),1)],
[f_pt(tri_pt(jj,1),2) f_pt(tri_pt(jj,2),2) f_pt(tri_pt(jj,3),2)], 'r');
end

lambda = zeros(3,1);
for x = 215:365
    for y = 200:400
        v_p = [y; x; 1];

        for j = 1:32
         B = [dis_pt(tri_pt(j,1),2) dis_pt(tri_pt(j,1),1) 1;
             dis_pt(tri_pt(j,2),2) dis_pt(tri_pt(j,2),1) 1;
             dis_pt(tri_pt(j,3),2) dis_pt(tri_pt(j,3),1) 1]';

         A = [f_pt(tri_pt(j,1),2) f_pt(tri_pt(j,1),1) 1;
             f_pt(tri_pt(j,2),2) f_pt(tri_pt(j,2),1) 1;
             f_pt(tri_pt(j,3),2) f_pt(tri_pt(j,3),1) 1]';

            lambda = B\v_p;
            if lambda(1)> 0 && lambda(2)> 0 && lambda(3)> 0
                v = round(A * lambda);
                warpimg(v(1),v(2),1:3) = rgbimg(y,x,1:3);
            end

        end
    end
end

figure(2)
imshow(warpimg);
title('Warp Image')
```