MATLAB Image Histogram Equalizer and Enhancement

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Course Code: Image Processing and Analysis

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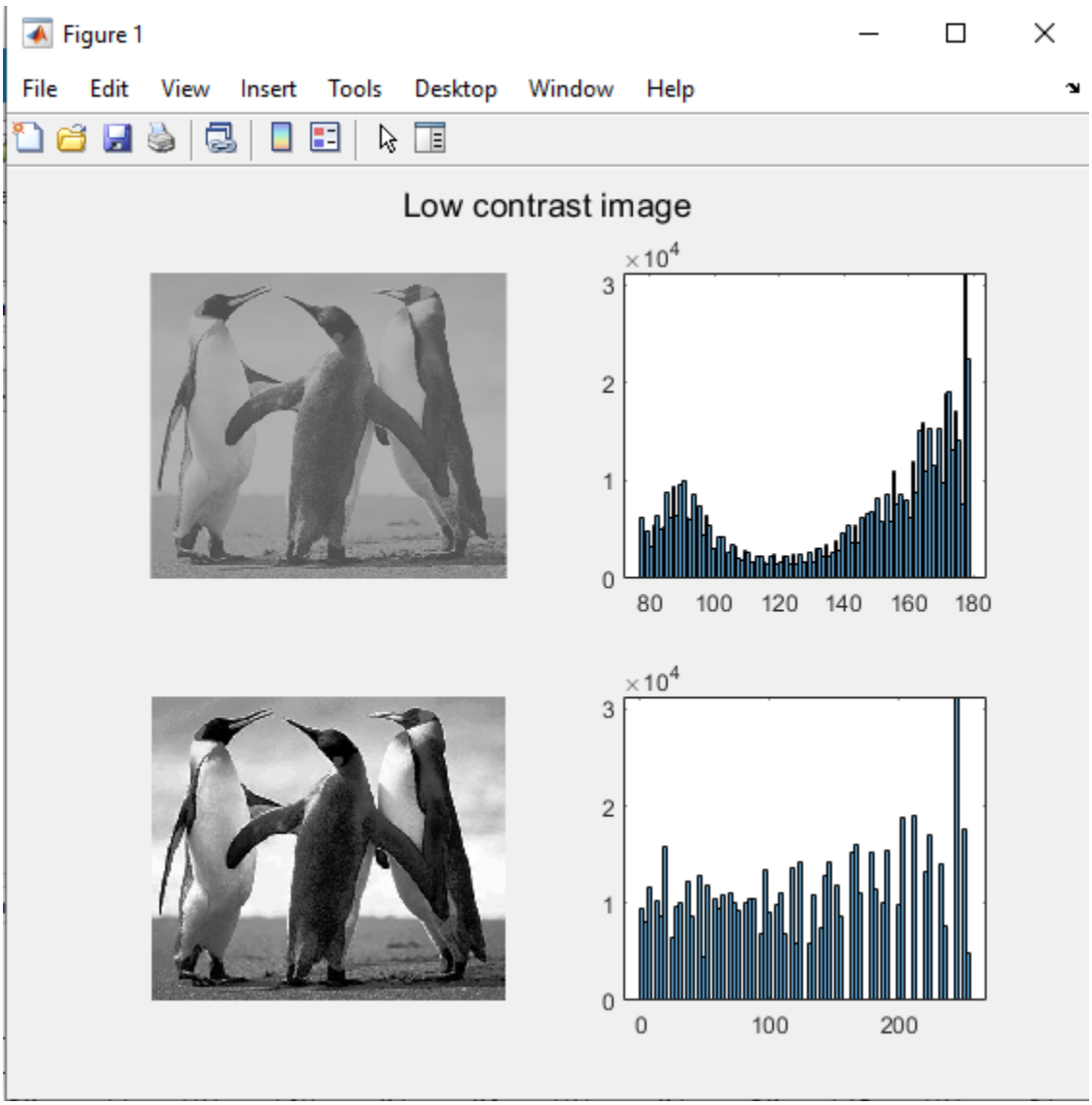
Task

Task 1: Implement histogram equalization technique on
a) Low contrast image

Editor - C:\Users\Maimoona Khilji\Documents\MATLAB\task05.m

task05.m

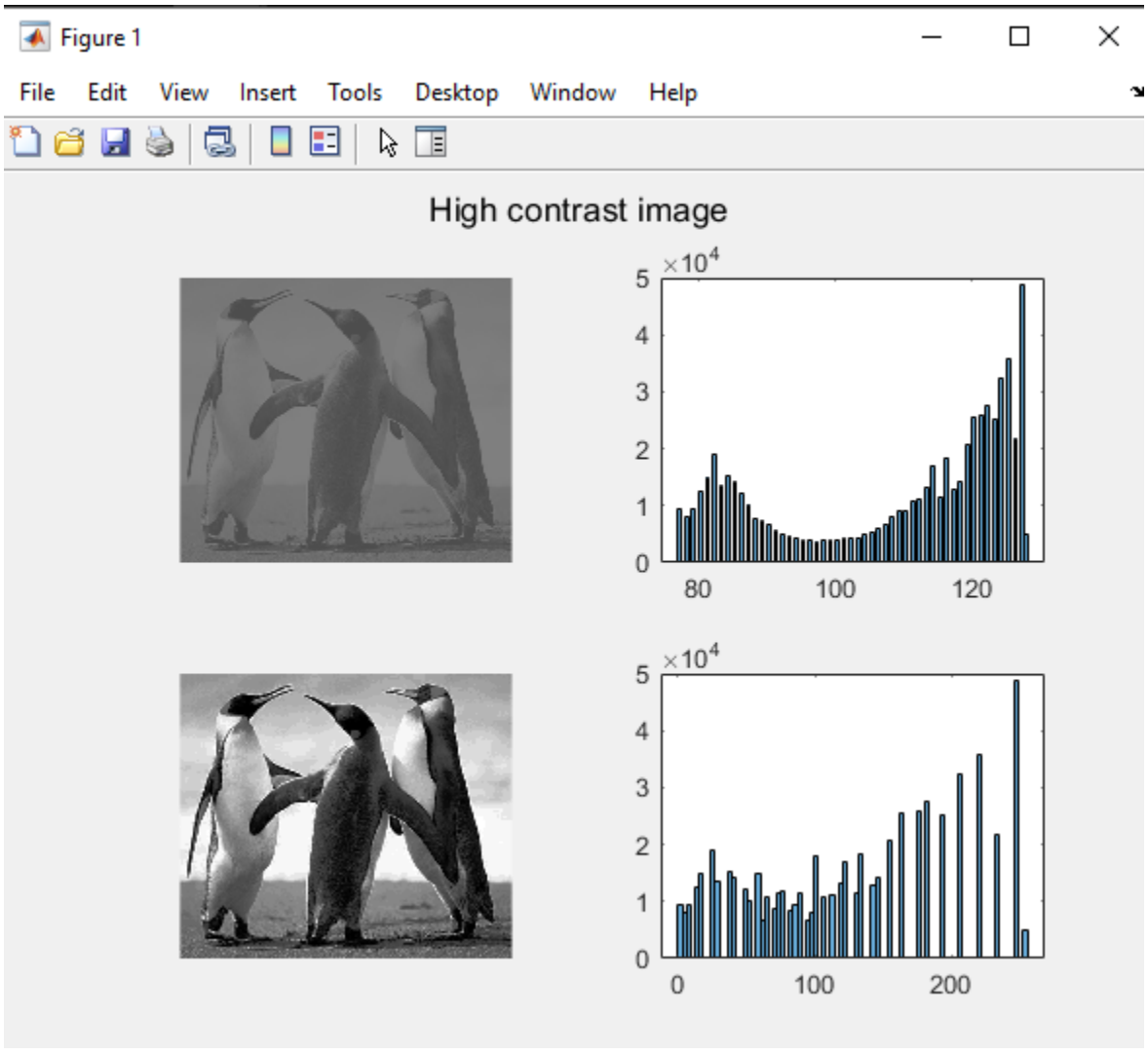
```
%Task 1: Implement histogram equalization technique on
f=imread("penguin.jpg");


% a) Low contrast image
L=imadjust(f,[0 1],[0.3 0.7]);
subplot(2,2,1); imshow(L); subplot(2,2,2); histogram(L);
e=histeq(L)
subplot(2,2,3); imshow(e); subplot(2,2,4); histogram(e);
sgtitle('Low contrast image') ;

```



b) High contrast image

task05.m

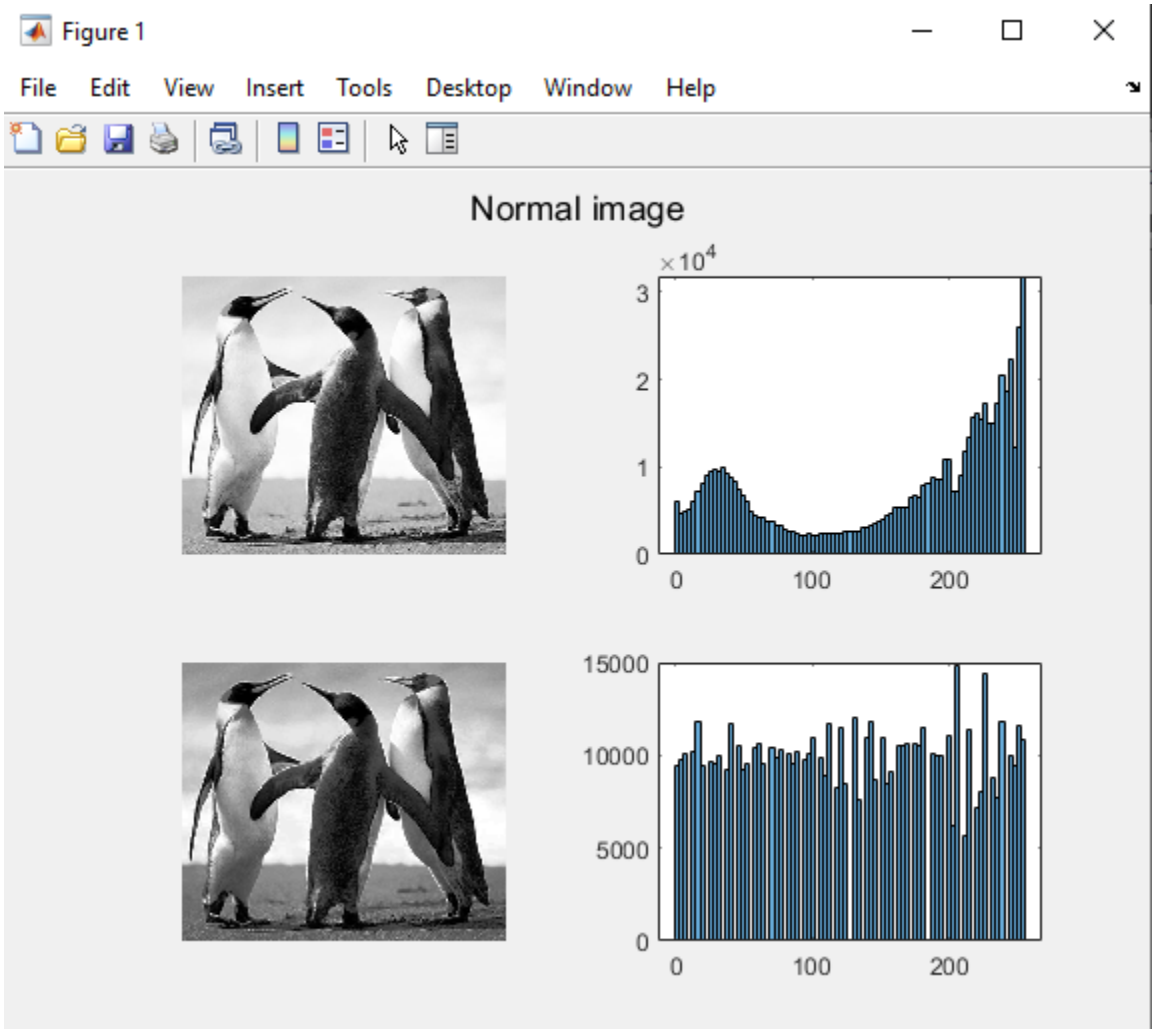
```
14    % b) High contrast image
15    h=imadjust(f,[0 1],[0.3 0.5]);
16    subplot(2,2,1);imshow(h);subplot(2,2,2);histogram(h);
17    e=histeq(h)
18    subplot(2,2,3); imshow(e); subplot(2,2,4); histogram(e);
19    sgtitle('High contrast image') ;
```



c) Normal image

task05.m

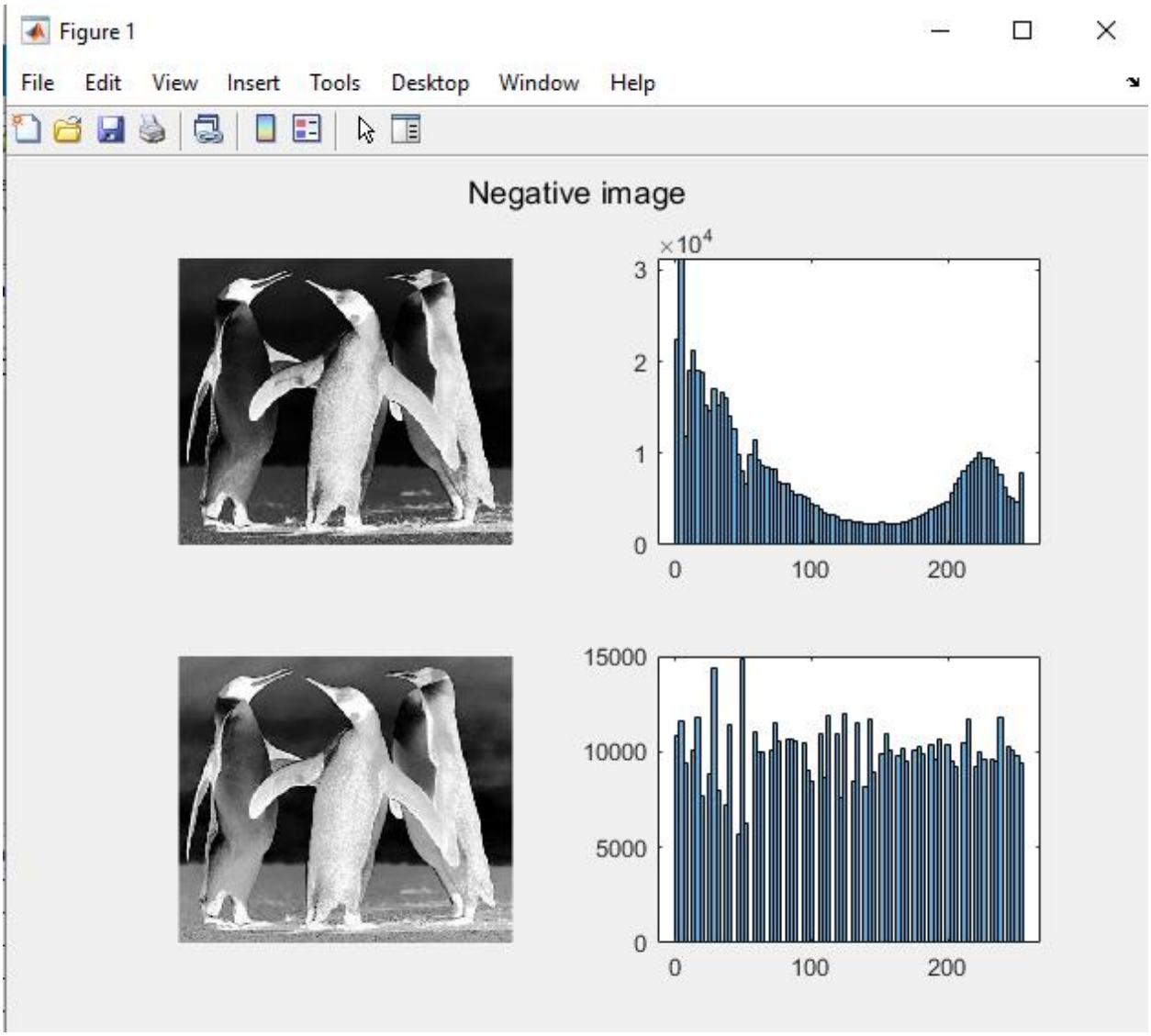
```
21  % c) Normal image
22  f=imread("penguin.jpg");
23  subplot(2,2,1);imshow(f);subplot(2,2,2);histogram(f);
24  e=histeq(f)
25  subplot(2,2,3); imshow(e); subplot(2,2,4); histogram(e);
26  sgtitle('Normal image') ;
```



d) Negative image

task05.m

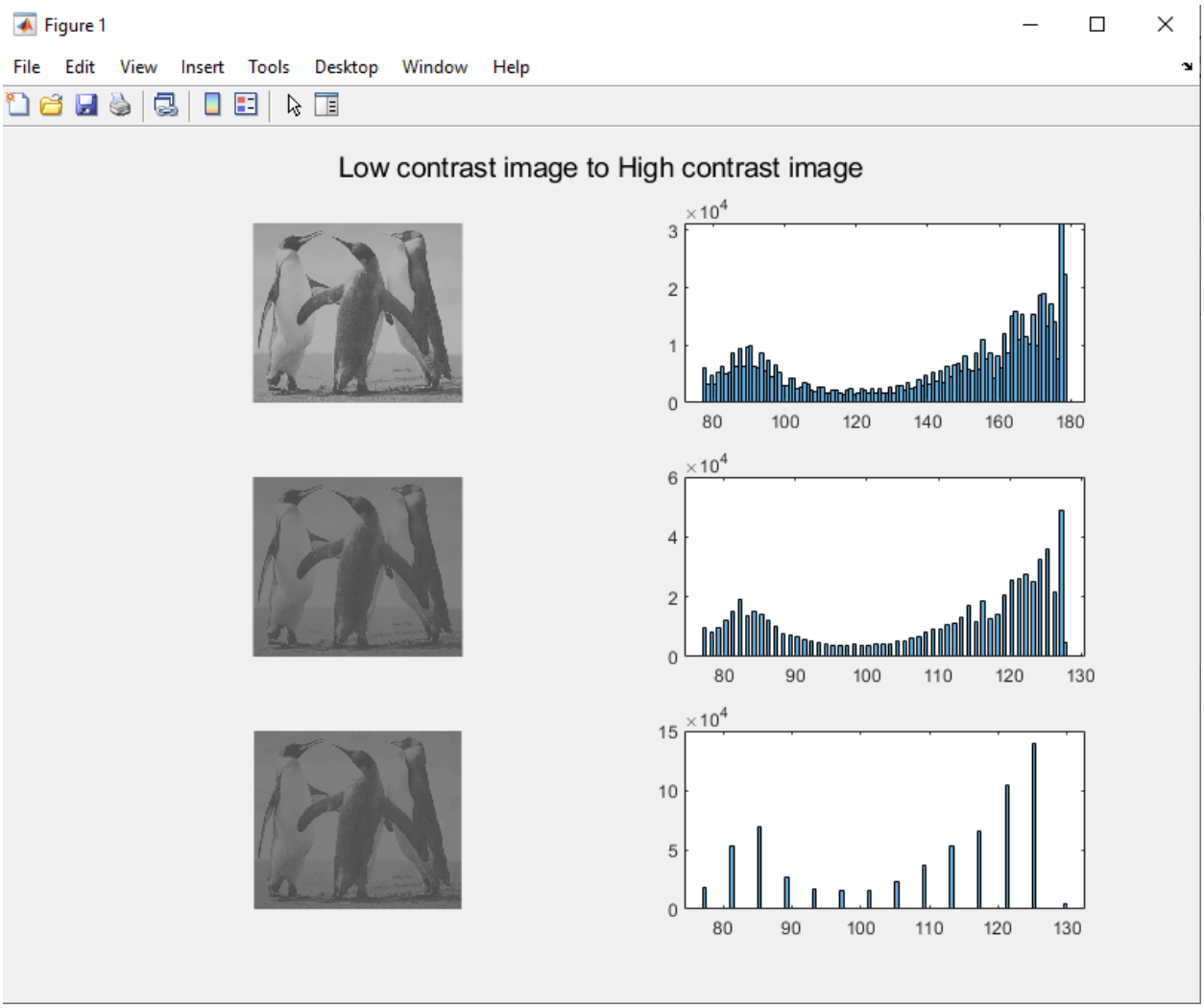
```
28  % d) Negative image
29  n=imadjust(f,[0 1],[1 0]);
30  subplot(2,2,1);imshow(n);subplot(2,2,2);histogram(n);
31  e=histeq(n)
32  subplot(2,2,3); imshow(e); subplot(2,2,4); histogram(e);
33  sgtitle('Negative image') ;
```



Task 2: Implement histogram Matching between
a) Low contrast image to High contrast image

task05.m

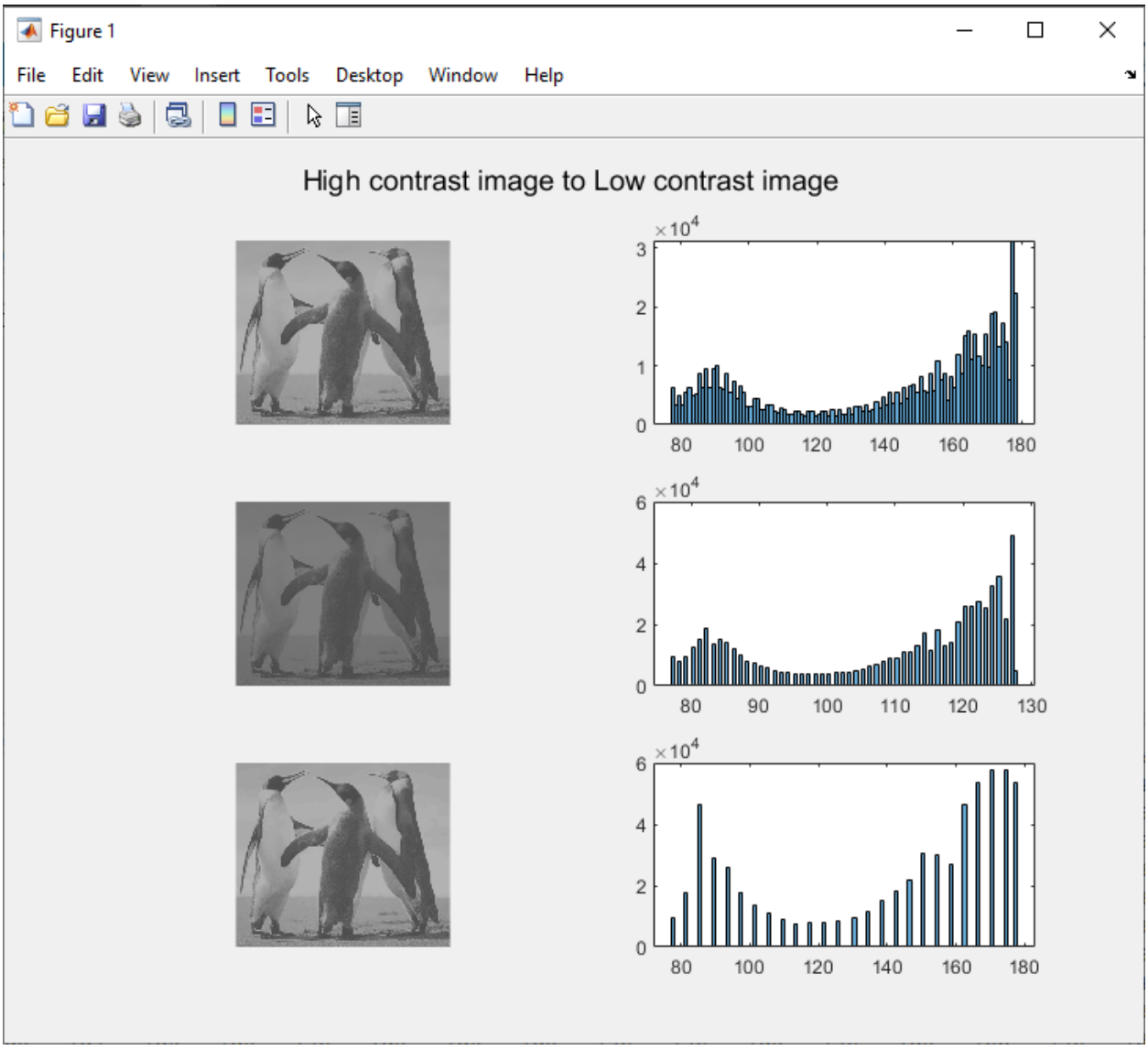
```
40  f=imread("penguin.jpg");
41
42  % a) Low contrast image to High contrast image and vice versa
43  L=imadjust(f,[0 1],[0.3 0.7]);
44  h=imadjust(f,[0 1],[0.3 0.5]);
45
46  subplot(3,2,1); imshow(L); subplot(3,2,2); histogram(L);
47  subplot(3,2,3); imshow(h); subplot(3,2,4); histogram(h);
48  e=imhistmatch(L,h)
49  subplot(3,2,5); imshow(e); subplot(3,2,6); histogram(e);
50  sgtitle('Low contrast image to High contrast image') ;
```



b) High contrast image to Low contrast image

task05.m

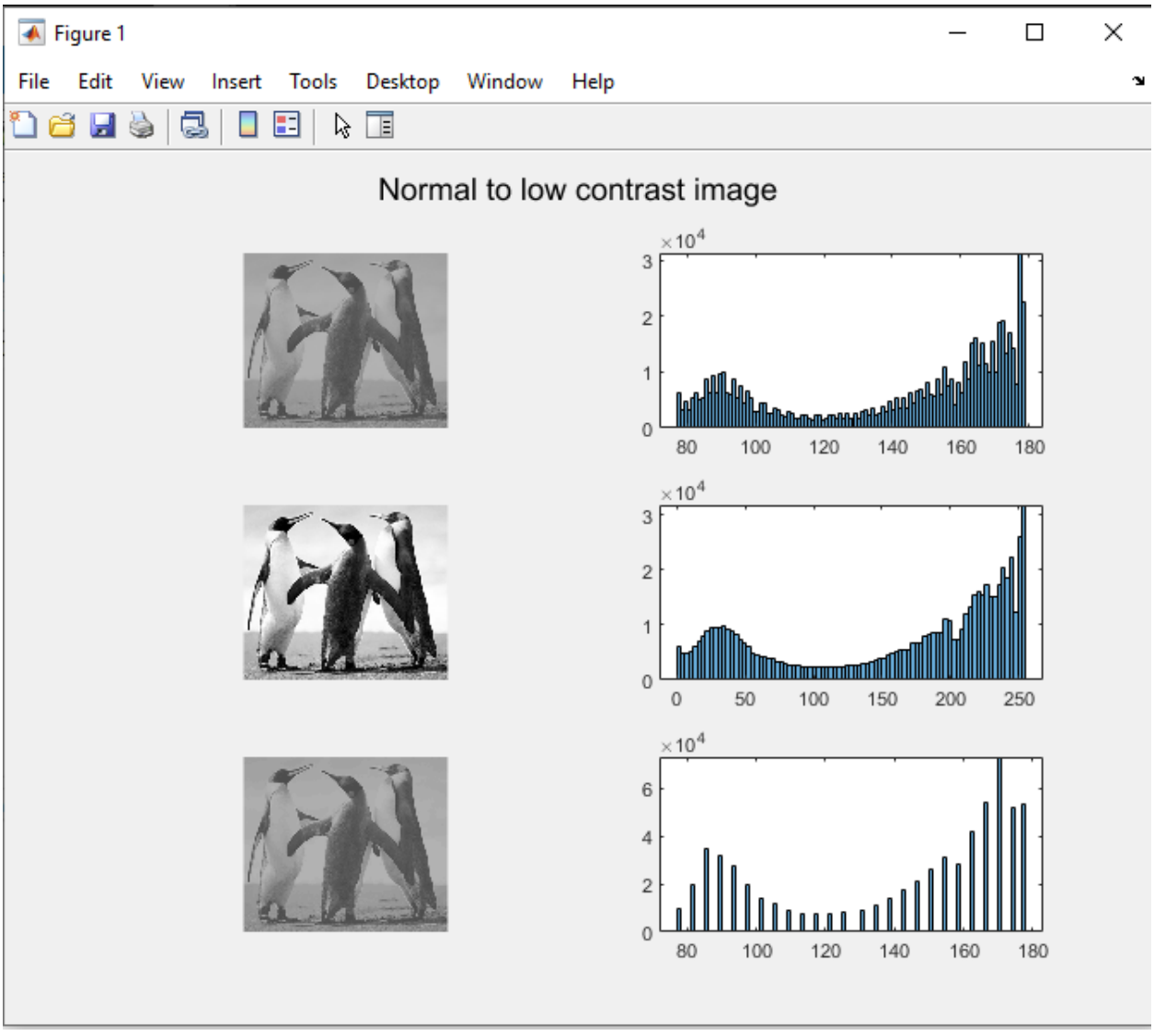
```
52  % b) High contrast image to Low contrast image
53  L=imadjust(f,[0 1],[0.3 0.7]);
54  h=imadjust(f,[0 1],[0.3 0.5]);
55
56  subplot(3,2,1); imshow(L); subplot(3,2,2); histogram(L);
57  subplot(3,2,3); imshow(h); subplot(3,2,4); histogram(h);
58  e=imhistmatch(h,L)
59  subplot(3,2,5); imshow(e); subplot(3,2,6); histogram(e);
60  sgtitle('High contrast image to Low contrast image ') ;
```



c) Normal to low contrast image

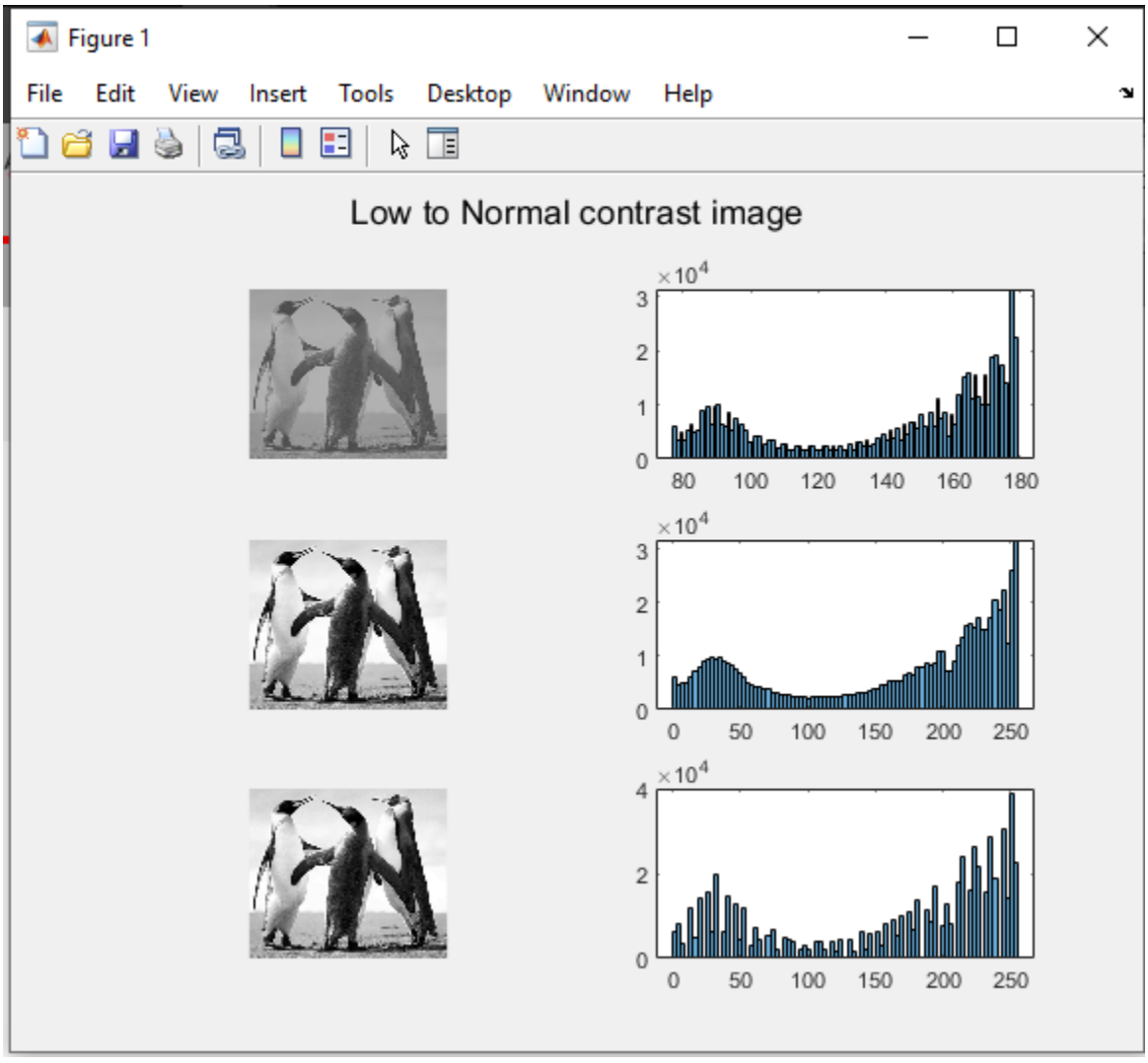
task05.m

```
65    % c) Normal to low contrast image
66    f=imread("penguin.jpg");
67    L=imadjust(f,[0 1],[0.3 0.7]);
68    subplot(3,2,1); imshow(L); subplot(3,2,2); histogram(L);
69    subplot(3,2,3); imshow(f); subplot(3,2,4); histogram(f);
70    e=imhistmatch(f,L)
71    subplot(3,2,5); imshow(e); subplot(3,2,6); histogram(e);
72    sgtitle('Normal to low contrast image') ;
```



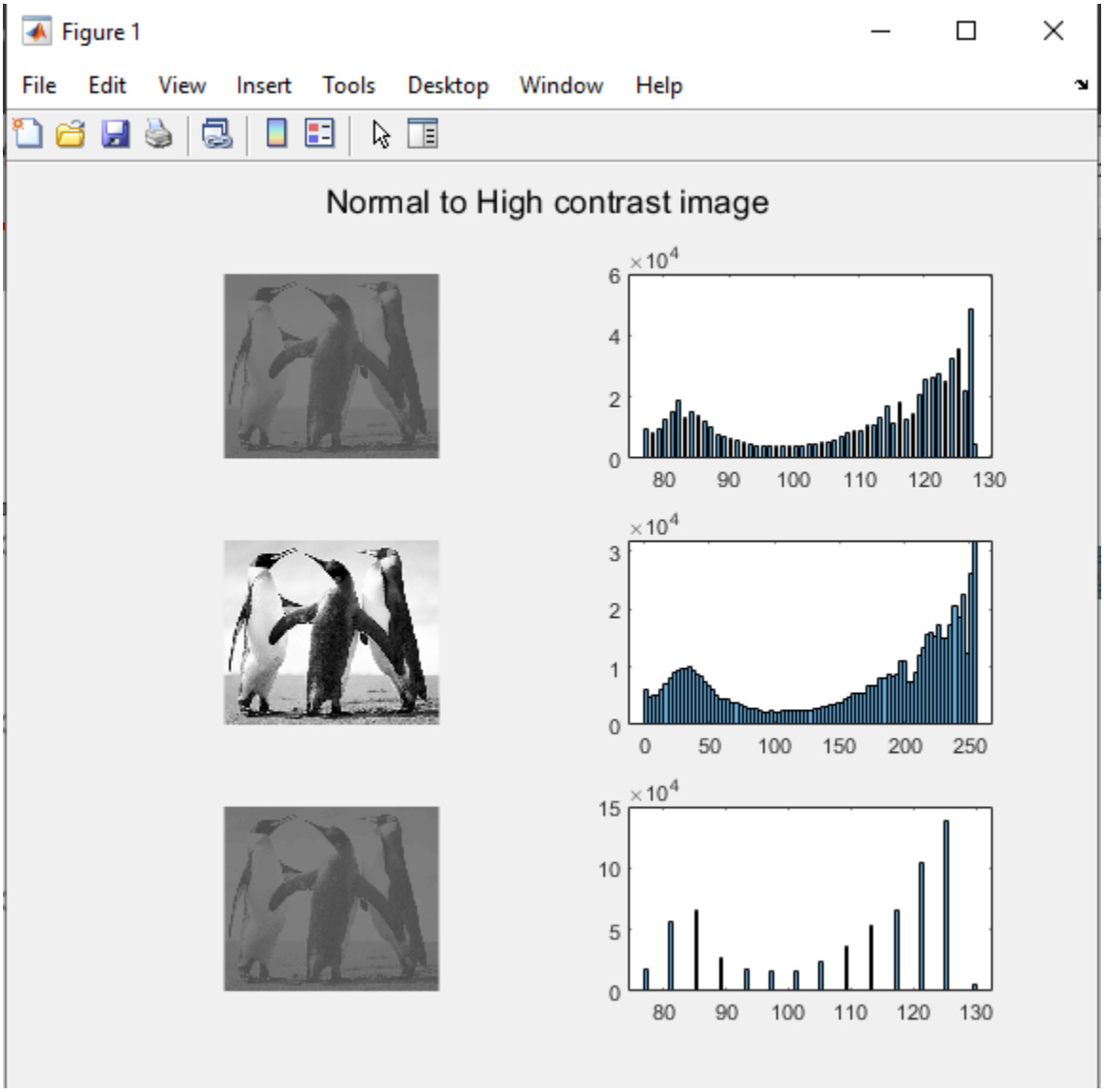
d) Low to Normal contrast image

```
task05.m *
74    % d) Low to Normal contrast image
75    f=imread("penguin.jpg");
76    L=imadjust(f,[0 1],[0.3 0.7]);
77    subplot(3,2,1); imshow(L); subplot(3,2,2); histogram(L);
78    subplot(3,2,3); imshow(f); subplot(3,2,4); histogram(f);
79    e=imhistmatch(L,f)
80    subplot(3,2,5); imshow(e); subplot(3,2,6); histogram(e);
81    sgtitle('Low to Normal contrast image') ;
```



e) Normal to high contrast image

```
task05.m
83
84    % e) Normal to High contrast image
85    f=imread("penguin.jpg");
86    h=imadjust(f,[0 1],[0.3 0.5]);
87    subplot(3,2,1); imshow(h); subplot(3,2,2); histogram(h);
88    subplot(3,2,3); imshow(f); subplot(3,2,4); histogram(f);
89    e=imhistmatch(f,h)
90    subplot(3,2,5); imshow(e); subplot(3,2,6); histogram(e);
91    sgtitle('Normal to High contrast image ') ;
```



f) High to Normal contrast image

task05.m

```
94  % f) High to Normal contrast image
95  f=imread("penguin.jpg");
96  h=imadjust(f,[0 1],[0.3 0.5]);
97  subplot(3,2,1); imshow(h); subplot(3,2,2); histogram(h);
98  subplot(3,2,3); imshow(f); subplot(3,2,4); histogram(f);
99  e=imhistmatch(h,f)
100 subplot(3,2,5); imshow(e); subplot(3,2,6); histogram(e);
101 sgtitle(' High to Normal contrast image ') ;
```