

```
P415.m x P413.m x +
1 — load('boat512.mat');
2 — n = 512;
3 — mu = 0.2;
4 — X = boat512/256;
5
6 — randn('state', 29);
7
8 — W = 0.1*randn(512, 512);
9
10 — Y = X + W;
11
12 — C = dctmtx(n);
13
14 — theta = sign(C*Y*C').*max(abs(C*Y*C')-mu, 0);
15
16 — X_after = C'*theta*C;
17
18 — SNR_before = 20*log10(norm(X, 'fro')/norm(Y - X, 'fro'));
19
20 — SNR_after = 20*log10(norm(X, 'fro')/norm(X_after - X, 'fro'));
21
22 — disp('SNR_before is');
23 — disp(SNR_before);
24 — disp('SNR_after is');
25 — disp(SNR_after);
26
27 — figure;
28 — imshow(boat512, []);
29
30 — figure;
31 — imshow(Y, []);
32
33 — figure;
34 — imshow(X_after, []);
```

命令行窗口

```
>> P413
SNR_before is
    15.1433

SNR_after is
    20.4072
```

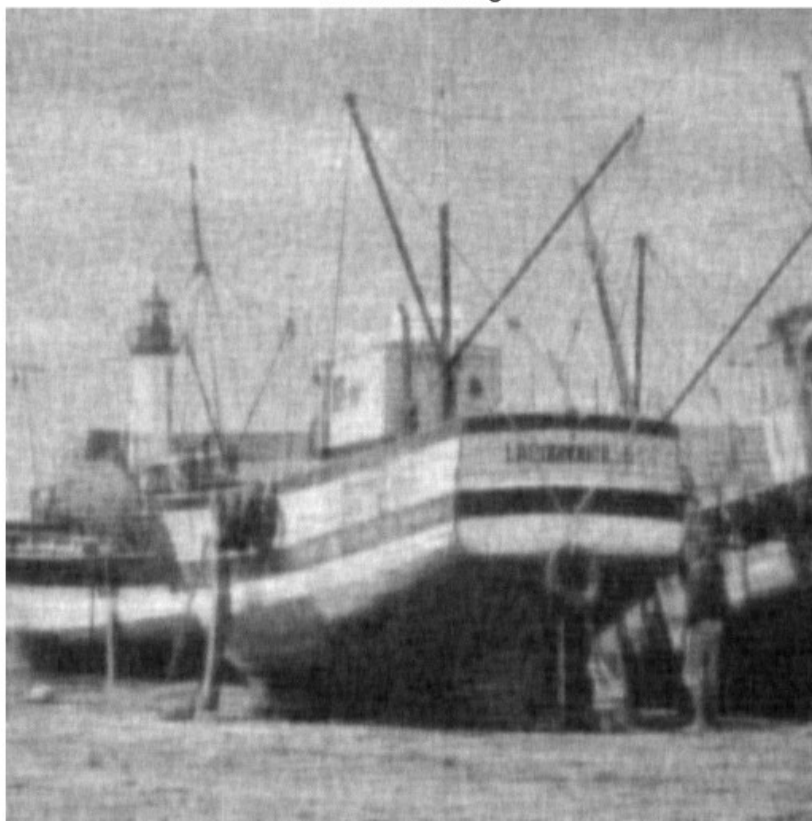
Original Picture



After Contaminated



AfterDenosing



```

P415.m x P413.m x +
1  A1 = [-1 0; 0 -1; 0.5 1];
2  b1 = [0; 0; 1];
3
4  A2 = [2 -1; -2 -1; 0 1];
5  b2 = [1.6; -2.4; 3];
6
7  y0 = [1;1];
8  v0 = [0; 0];
9
10 e_p = 0.000001;
11 e_d = e_p;
12 alpha = 0.01;
13 iteration_count= 1;
14
15 while 1
16     cvx_begin quiet
17         variable X(2,1);
18         minimize(X'*X -2*(y0 - v0)'*X)
19         subject to
20             A1*X <= b1;
21         cvx_end
22
23         cvx_begin quiet
24             variable Y(2,1);
25             minimize(Y'*Y - 2*(X + v0)'*Y)
26             subject to
27                 A2*Y <= b2;
28             cvx_end
29             iteration_count = iteration_count+ 1;
30             if (norm(X - Y, 2) <= e_p) && (norm(-alpha*(Y - y0), 2) <= e_d)
31                 break
32             end
33             y0 = Y;
34             v0 = v0 + (X - Y);
35
36     end
37     disp('X is');
38     disp(X);
39     disp('The iteration count is');
40     disp(iteration_count);
41
42     if ((A1*X)<b1)
43         if ((A2*Y)<b2)
44             disp('Since A1*X < b1 and A2*Y < b2, the conditions satisfied')
45         else
46             disp('A2*Y>b2');
47         end
48     else
49         disp('A1*X>b1');
50     end

```

命令窗口

```

>> P415
X is
    1.0000
    0.4003

The iteration count is
    13

Since A1*X < b1 and A2*Y < b2, the conditions satisfied
>> P415
X is
    1.0000
    0.4999

The iteration count is
     3

Since A1*X < b1 and A2*Y < b2, the conditions satisfied
>> P415
X is
    0.9624
    0.4760

The iteration count is
    17

Since A1*X < b1 and A2*Y < b2, the conditions satisfied

```