P415.m P413.m +

```
load('boat512.mat');
n = 512;
mu = 0.2;
X = boat512/256;

randn('state',29);

W = 0.1*randn(512,512);

Y = X + W;

C = dctmtx(n);

theta = sign(C*Y*C').*max(abs(C*Y*C')-mu,0);

X_after = C'*theta*C;

SNR_before = 20*log10(norm(X, 'fro')/norm(Y - X, 'fro'));

SNR_after = 20*log10(norm(X, 'fro')/norm(X_after - X, 'fro'));

disp('SNR_before is');
disp(SNR_before);
disp('SNR_after is');
disp(SNR_after);

figure;
imshow(boat512,[]);

figure;
imshow(Y,[]);

figure;
imshow(X_after,[]);
```

命令行窗口

```
>> P413
SNR_before is
   15.1433

SNR_after is
   20.4072
```

Orihinal Picture

AfterContainminated

AfterDenosing

P415.m | P413.m

```
A1 = [-1 0; 0 -1; 0.5 1];
b1 = [0; 0; 1];

A2 = [2 -1; -2 -1; 0 1];
b2 = [1.6; -2.4; 3];

y0 = [1;1];
v0 = [0; 0];

e_p = 0.000001;
e_d = e_p;
alpha = 0.01;
iteration_count= 1;

while 1
    cvx_begin quiet
    variable X(2,1);
    minimize(X'*X -2*(y0 - v0)'*X)
    subject to
    A1*X <= b1;
    cvx_end

    cvx_begin quiet
    variable Y(2,1);
    minimize(Y'*Y - 2*(X + v0)'*Y)
    subject to
    A2*Y <= b2;
    cvx_end
    iteration_count = iteration_count+ 1;
    if (norm(X - Y, 2) <= e_p) && (norm(-alpha*(Y - y0), 2) <= e_d)
        break
    end
    y0 = Y;
    v0 = v0 + (X - Y);

end
disp('X is');
disp(X);
disp('The iteration count is');
disp(iteration_count);

if((A1*X)<b1)
    if((A2*Y)<b2)
        disp('Since A1*X < b1 and A2*Y < b2,the conditions satisfied'
    else
        disp('A2*Y>b2');
    end
else
    disp('A1*X>b1');
end
```

命令行窗口

```
>> 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
>>
```