```matlab
clear;clc;close all;
pic_ori = imread('spine.tif');
size = size(pic_ori);
% 若图像是rbg的，则转化为灰度图
if( numel(size) > 2 )
    pic_ori = rgb2gray(pic_ori);
    size = size(pic_ori);
end
height = size(1);
width = size(2);
gray_level = 256;

% 获取灰度值频数分布
P = zeros(gray_level,1);
for i = 1:height
    for j = 1:width
        gray_value = pic_ori(i,j)+1;
        P(gray_value) = P(gray_value) + 1;
    end
end

% 获得灰度值累积分布
cdf = zeros(gray_level,1);
cdf(1) = P(1);
cdf_min = 0;
for i = 2:gray_level
    cdf(i) = cdf(i-1) + P(i);
    if(cdf_min == 0 && cdf(i) > 0)
        cdf_min = cdf(i);
    end
end

% 对灰度值累积分布进行转化
cdf_equal = zeros(gray_level, 1);
for i = 1:gray_level
    cdf_equal(i) = round( (cdf(i)-cdf_min) / (height * width - cdf_min) * (gray_level - 1) ) + 1;
end

% 计算图像像素点新的灰度值
pic_equal = pic_ori;
for i = 1:height
    for j = 1:width
        pic_equal(i,j) = cdf_equal( pic_equal(i,j) + 1 );
    end
end

% 获取均衡后的灰度值频数分布
P_equal = zeros(gray_level,1);
for i = 1:height
    for j = 1:width
        gray_value = pic_equal(i,j)+1;
        P(gray_value) = P(gray_value) + 1;
```

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        end
end
figure(1);
subplot(121);imshow(pic_ori);title('原图')
subplot(122);imshow(pic_equal);title('均衡化后');
figure(2);
subplot(121);imhist(pic_ori);title('原图像直方图');
subplot(122);imhist(pic_equal);title('均衡化后直方图');
```