Histogram Equalisation 14 Jan 2026

Nenavath Dhanush Rathod Input: Image Output: Image (Histogram Equalised)

Contents

Defaults

```
clc;
clear all;
close all;
```

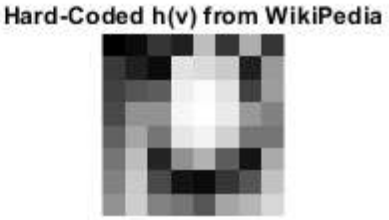
river Example - Hardcoded Histogram Equalisation

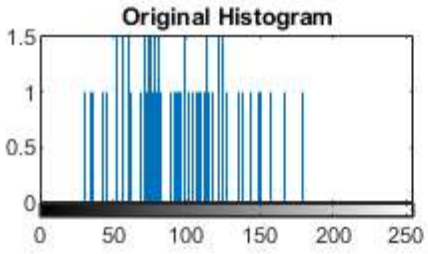
```
myImage = [
 [157, 114,  60,  31,  30,  36,  52,  76],
 [ 74, 167, 114,  35,  43,  56,  73, 104],
 [ 78,  93,  95,  57,  96, 144, 149, 179],
 [ 56,  81,  94, 108, 122, 125, 135, 151],
 [ 76,  80,  81,  72,  74,  82,  79,  89],
 [ 52,  61, 102, 118, 128, 138, 112,  99],
 [ 62, 107, 110,  92, 115, 122,  79,  69],
 [ 77, 125,  99,  46,  61,  78,  61,  72]
];

myImage = cast(myImage, "uint8");
subplot(3,2,1);
imshow(myImage);
title("Original-Image");

eq_img_1 = [0   12      53      32      190     53      174     53
            57  32      12      227     219     202     32      154
            65  85      93      239     251     227     65      158
            73  146     146     247     255     235     154     130
            97  166     117     231     243     210     117     117
            117 190     36      146     178     93      20      170
            130 202     73      20      12      53      85      194
            146 206     130     117     85      166     182     215];

eq_img_1 = cast(eq_img_1, "uint8");
subplot(3,2,2), imshow(eq_img_1), title("Hard-Coded h(v) from WikiPedia");
subplot(3,2,5), imhist(myImage), title("Original Histogram");
```

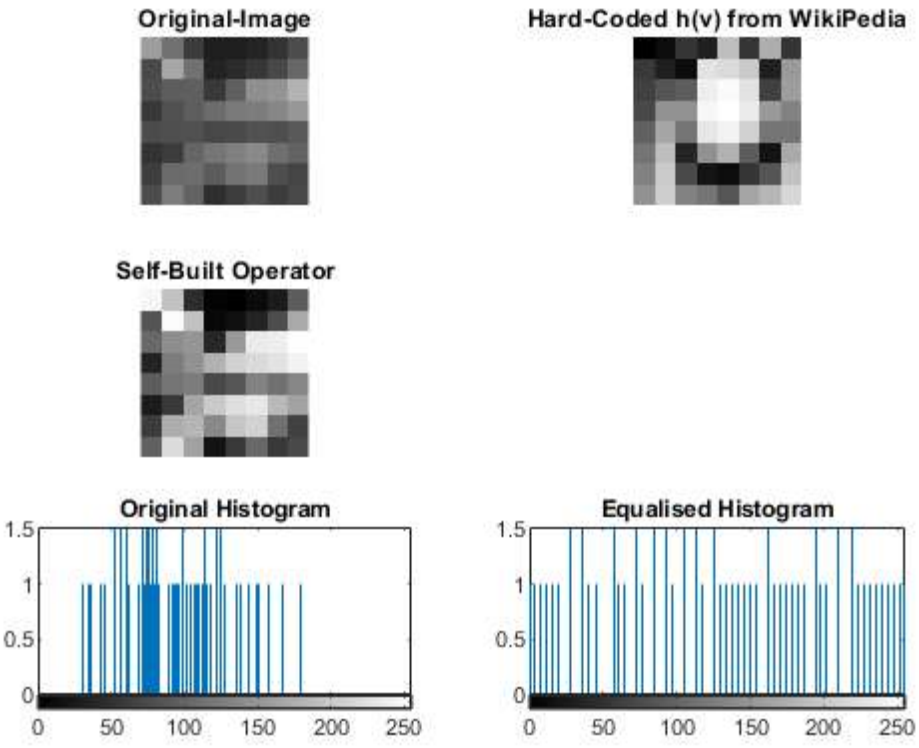




Self-Built Histogram Equalisation Operation

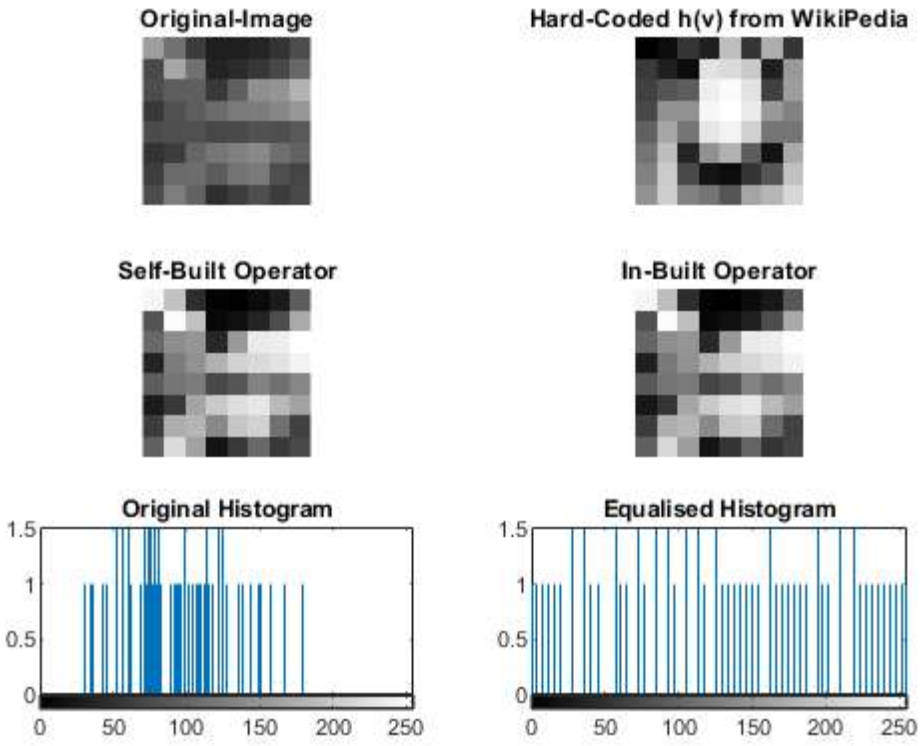
```
[R,C] = size(myImage);
counts = imhist(myImage);
cdf_counts = cumsum(counts);
cdf_min = cdf_counts(find(cdf_counts > 0, 1));
L = 256; % 8 bit image
eq_img_2 = zeros(R,C, "uint8");

for row = 1:R
    for col = 1:C
        curr_pixel = myImage(row,col);
        h_v = round(((cdf_counts(curr_pixel + 1) - cdf_min)/((R*C)-cdf_min))*(L-1));
        eq_img_2(row,col) = h_v;
    end
end
subplot(3,2,3), imshow(eq_img_2), title("Self-Built Operator");
subplot(3,2,6), imhist(eq_img_2), title("Equalised Histogram");
```



In-built operator

```
eq_img_3 = histeq(myImage);
subplot(3,2,4);
imshow(eq_img_3);
title("In-Built Operator");
```



Published with MATLAB® R2024a