
```

% Joseph R. Palicke
% Lab 10 pt 1

t = [0:.1:2*pi];           % Start with the simple setup
sig = sin(t);              % Signal to be quantized
partition = [-1:.2:1];     % Partition initial guess
codebook = [-1.2:.2:1];    % Codebook initial guess

% Quantization using the initial partition and codebook

[index,quants,distor] = quantiz(sig,partition,codebook);

% Optimize quantizaion "Lloyds function"

[partition2,codebook2] = lloyds(sig,codebook);

% Comparing mean square distortions of initial and optimized results

[index2,quant2,distor2] = quantiz(sig,partition2,codebook2);

disp('codebook is:')
[codebook(:) codebook2(:)]
disp('partition is:')
[partition(:) partition2(:)]
disp('distor is:')
[distor, distor2]

figure(1);
plot(t,sin(t),'g',t,quants,'r',t,quant2,'b');
title('Original signal (g), vs Quantitized (r), vs Optimized (b)')
xlabel('t');
ylabel('f(t)');

codebook is:

ans =

    -1.2000    -0.9800
    -1.0000    -0.8993
    -0.8000    -0.7771
    -0.6000    -0.6023
    -0.4000    -0.4079
    -0.2000    -0.2187
         0     -0.0000
     0.2000     0.2186
     0.4000     0.4078
     0.6000     0.5997
     0.8000     0.7933
     1.0000     0.9590

partition is:

```

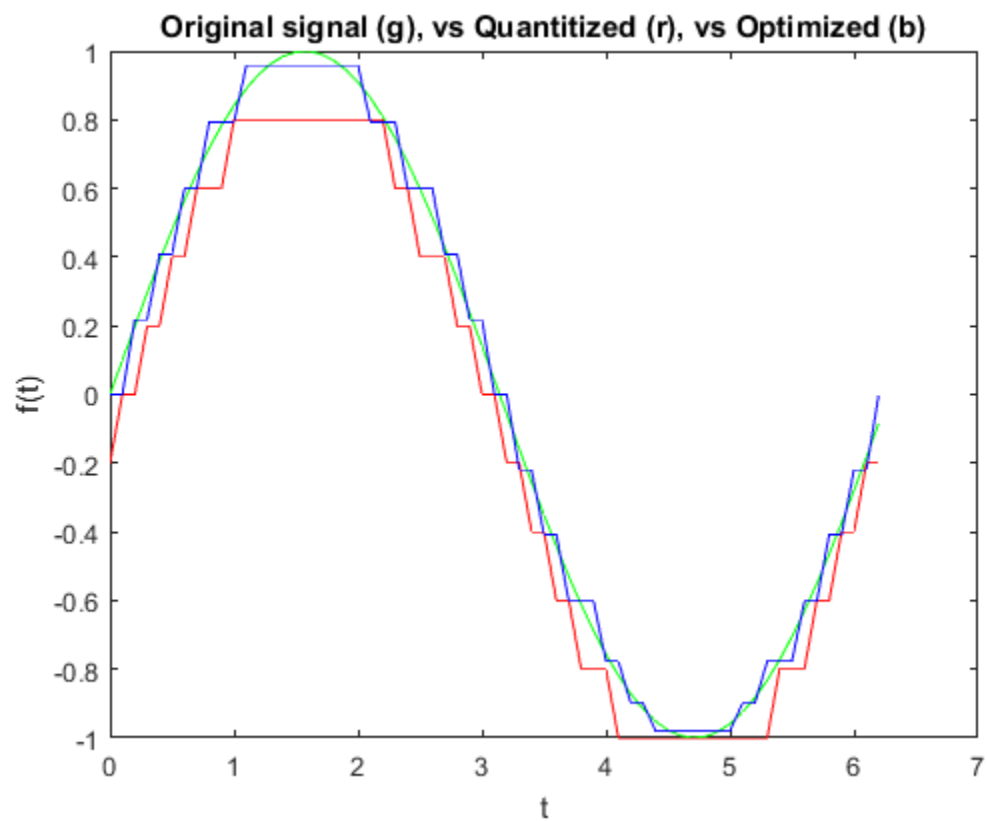
`ans =`

-1.0000	-0.9396
-0.8000	-0.8382
-0.6000	-0.6897
-0.4000	-0.5051
-0.2000	-0.3133
0	-0.1094
0.2000	0.1093
0.4000	0.3132
0.6000	0.5037
0.8000	0.6965
1.0000	0.8762

`distor is:`

`ans =`

0.0148	0.0022
--------	--------



Published with MATLAB® R2016a