

LAB 1

To study Sampling and Quantization of Image

1. Sampling of the image

```
clc;
clear all;
close all;
p=imread('cameraman.tif');
[m n]=size(p);
p=double(p);

for i=1:2:m

    for j=1:2:n
        q=p(i,j);
        if((q>=0) && (q<=15))
            f(i,j)=15;
        elseif((q>15) && (q<=30))
            f(i,j)=30;
        elseif((q>30) && (q<=45))
            f(i,j)=45;
        elseif((q>45) && (q<=60))
            f(i,j)=60;
        elseif((q>60) && (q<=75))
            f(i,j)=75;
        elseif((q>75) && (q<=90))
            f(i,j)=90;
        elseif((q>90) && (q<=105))
            f(i,j)=105;
        elseif((q>105) && (q<=120))
            f(i,j)=120;
        elseif((q>120) && (q<=135))
            f(i,j)=135;
        elseif((q>135) && (q<=150))
            f(i,j)=150;
        elseif((q>150) && (q<=165))
            f(i,j)=165;
        elseif((q>165) && (q<=180))
            f(i,j)=180;
        elseif((q>180) && (q<=195))
            f(i,j)=195;
        elseif((q>195) && (q<=210))
            f(i,j)=210;
        elseif((q>210) && (q<=225))
            f(i,j)=225;
```

```

        elseif((q>225) && (q<=240))
            f(i,j)=240;
        else
            f(i,j)=255;
        end
    end
end
p=uint8(p);
imshow(p);
figure;
imhist(p);
figure;

f=uint8(f);
imshow(f);
figure;
imhist(f);

```

2. Sampling of the Image

```

clc;
clear all;
close all;
p=imread('cameraman.tif');
[m n]=size(p);
u=1;

for i=1:2:m
    v=1;
    for j=1:2:n
        f(u,v)=p(i,j);
        v=v+1;
    end
    u=u+1;
end
imshow(p);
figure;
imshow(f);

```

LAB 2

Spatial Domain Transformations

1. To study Bit-Plane Slicing

```
clc;
clear all;
close all;
a=imread('bitplane.tif');
b=mod(a,2);
a=a/2;
b=b*128;
subplot(3,3,1);
imshow(a);
b=mod(a,2);
a=a/2;
b=b*64;
subplot(3,3,2);
imshow(a);
b=mod(a,2);
a=a/2;
b=b*32;
subplot(3,3,3);
imshow(a);
b=mod(a,2);
a=a/2;
b=b*16;
subplot(3,3,4);
imshow(a);
b=mod(a,2);
a=a/2;
b=b*8;
subplot(3,3,5);
imshow(a);
b=mod(a,2);
a=a/2;
b=b*4;
subplot(3,3,6);
imshow(a);
b=mod(a,2);
a=a/2;
b=b*2;
subplot(3,3,7);
imshow(a);
b=mod(a,2);
a=a/2;
```

```

b=b*1;
subplot(3,3,8);
imshow(a);

```

2. To Study Contrast Streching

```

clc;
clear all;
close all;
b=imread('contraststretch.tif');
[m n]=size(b);
r1=input('enter r1: ');
r2=input('enter r2: ');
s1=input('enter s1: ');
s2=input('enter s2: ');
for i=1:m
    for j=1:n
        if((b(i,j)<r1))
            c(i,j)=s1/r1*(b(i,j));

            elseif((b(i,j)>=r1) && (b(i,j)<=r2))
                c(i,j)=((s2-s1)/(r2-r1)*(b(i,j)-r1))+s1;
            else
                c(i,j)=((s2-255)/(r2-255)*(b(i,j)-255))+255;
            end
        end
    end
end
imshow(b);
figure;
imshow(c);

```

3. Dont know what this code is about

```

b=imread('pout.tif');
t=input('start: ');
y=input('end: ');
%q=input('scale: ');

[m n] = size(b);

for a=1:m
    for c=1:n
        e=b(a,c);
        if( (e>=t) && (e<=y))

                p(a,c)=150;

```

```

        else
            p(a,c)=e;
        end
    end
end

```

```

end

```

```

imshow(b);
figure;
imshow(p);

```

4. Log Transformation

```

clc;
clear all;
close all;
b=imread('logtm.tif');
[m n]=size(b);
b=double(b);
for i=1:m
    for j=1:n
        c(i,j)=10*log(1+b(i,j));
    end
end
a=uint8(c);
imshow(b);
figure;
imshow(a);

```

5. Power Law Transformation

```

clc;
clear all;
close all;
b=imread('powerlaw.tif');
[m n]=size(b);
b=double(b);
for i=1:m
    for j=1:n
        c(i,j)=1*b(i,j)^(0.5);
    end
end
a=uint8(c);
d=uint8(b);
imshow(d);
figure;
imshow(a);

```

LAB 3

Histogram Processing

1. Plot Histogram

```
b=imread('pout.tif');
[m n]=size(b);
for i=1:m
    for j=1:n
        a(i,j)=255-b(i,j);
    end
end
imshow(b);
figure;
imshow(a);
```

2. Histogram Matching

```
b=imread('pout.tif');

[m,n] = size(b)
p=zeros(1,256);
%z=zeros(1,256);
for i=1:256
    %    z(i)=i;
    for a=1:m
        for c=1:n
            if(b(a,c)==(i-1))

                p(i)=p(i)+1;

            end
        end
    end

end
end
stem(p);
```