MATLAB (Implementation code)

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a=imread('gray_image.bmp');
b=imread('scribbled_image.bmp');
figure, imshow(b);
b=rgb2ycbcr(b);
a(:,:,1)=a(:,:,1);
a(:,:,2)=b(:,:,2);
a(:,:,3)=b(:,:,3);

blend = repmat(struct('cb',[128],'cr',[128],'d',[255],'w',[]),size(a,1),size(a,2));
link = struct('x',[],'y',[],'cb',[],'cr',[],'d',[]);
k=1;

for i = 1:size(a,1);
    for j = 1:size(a,2);
        if((a(i,j,2)~=128) | (a(i,j,3)~=128))
            link.x(k)=i;
            link.y(k)=j;
            link.cb(k)=a(i,j,2);
            link.cr(k)=a(i,j,3);
            link.d(k)=0;
            k=k+1;
        end
    end
end

n=numel(link.x);

while(n>0)
    [asd lam] = min(link.d);
    i=link.x(lam);
    j=link.y(lam);
    bool = find(blend(i,j).cb == link.cb(lam));
    if(isempty(bool))
        blend(i,j).cb = [link.cb(lam) blend(i,j).cb];
        blend(i,j).cr = [link.cr(lam) blend(i,j).cr];
        blend(i,j).d = [link.d(lam) blend(i,j).d];
        for ia=-1:1
            for ja=-1:1
                ii=i+ia;
                jj=j+ja;
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                if ((ja==0)&(ia==0))
                elseif ((ii>=1)&(jj>=1)&(ii<=size(a,1))&(jj<=size(a,2)))
                    link.x(k)=ii;
                    link.y(k)=jj;
                    link.cb(k)=link.cb(lam);
                    link.cr(k)=link.cr(lam);
                    if(a(i,j,1)>a(ii,jj,1))
                        h=a(i,j,1)-a(ii,jj,1);
                    elseif(a(i,j,1)<a(ii,jj,1))
                        h=a(ii,jj,1)-a(i,j,1);
                    else
                        h=0;
                    end
                    link.d(k)=link.d(lam)+h;
                    k=k+1;
                end

            end
        end
    end

    link.x(lam)=[];
    link.y(lam)=[];
    link.cb(lam)=[];
    link.cr(lam)=[];
    link.d(lam)=[];
    n=numel(link.x);
    k=k-1;
end

for i=1:size(a,1)
    for j=1:size(a,2)
        v(i,j,1)=a(i,j,1);
        total = sum([blend(i,j).d])-255;
        t=numel(blend(i,j).d)-1;

        if(t>1)
            for var=1:t
                if(total==0)
                    blend(i,j).w(var)=1/t;
                else
                    blend(i,j).w(var)=(total-(blend(i,j).d(var)))/(total*(t-1));
                end
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            end
            v(i,j,2)=0;
            v(i,j,3)=0;
            for var=1:t
                if( blend(i,j).w(var)>=0)
                    v(i,j,2)=(blend(i,j).cb(var));
                    v(i,j,3)=(blend(i,j).cr(var));
                else
                    v(i,j,2)=(blend(i,j).cb(var)*blend(i,j).w(var))+v(i,j,2);
                    v(i,j,3)=(blend(i,j).cr(var)*blend(i,j).w(var))+v(i,j,3);
                end
            end
        else
            v(i,j,2)=blend(i,j).cb(t);
            v(i,j,3)=blend(i,j).cr(t);
        end

    end
end

v=ycbcr2rgb(v);
figure, imshow(v);
imwrite(v,'colored_image.bmp','bmp');
```