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Verslag MATLAB opdracht 2

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Subopdracht 1: Sharpen filter

```
function [] = rbiSharpen(file)

%Use roipoly to obtain the region of interest that needs sharpening. This
%produces a binary mask of an interactively selected region.
inputimage = imread(file);
mask = roipoly(inputimage);

%Multiply this mask with the input image. Note that this has to be done
for
%red , green and blue independently.

%imwrite(mask, 'test.bmp');

red = immultiply(mask, inputimage(:,:,1));
green = immultiply(mask, inputimage(:,:,2));
blue = immultiply(mask, inputimage(:,:,3));

%Concatenate R,G,B back to a 3 dimensional image. (Use function cat)

dim = cat(3, red, green, blue);

%The next step is to use different sharpening filters (unsharpening
filter,
%laplacian mask,...) on this mask.

sharpen = fspecial('unsharp');

%Then you have to find a way to get the sharpened mask back onto the
%original image.
subplot(1,3,1);
imshow(inputimage) , title('Original Image');
sharp = imfilter(dim, sharpen, 'replica');

b = inputimage;

for x = 1:size(inputimage,1)
    for y = 1:size(inputimage,2)
        if sharp(x,y,:) ~= 0
            b(x,y,1:3) = 0;
        end
    end
end
c = sharp + b ;

subplot(1,3,2);
imshow(sharp), title('Sharpened Mask');
subplot(1,3,3);
imshow(c), title('Result Image');
```

Sharpen filter MATLAB code

Subopdracht 2: Laplace filter

```
function [] = lasharpen(file)

inputimage = imread(file);
b = inputimage;

mask = roipoly(inputimage);

red = immultiply(mask, inputimage(:,:,1));
green = immultiply(mask, inputimage(:,:,2));
blue = immultiply(mask, inputimage(:,:,3));

%Concatenate R,G,B back to a 3 dimensional image. (Use function cat)

dim = cat(3, red, green, blue);

%makecform: Create a color transformation structure
struct1 = makecform('srgb2lab');
%applycform: Apply color space transformation
imLAB = applycform(dim, struct1);

imLAB2 = lab2double(imLAB);
w4 = fspecial('laplacian', 0.2);
%w8 = [ 1 1 1; 1 -8 1; 1 1 1];
g4 = imLAB2 - imfilter(imLAB2, w4, 'replica');

imLAB = g4;
struct2 = makecform('lab2srgb');
imResult = applycform(imLAB, struct2);

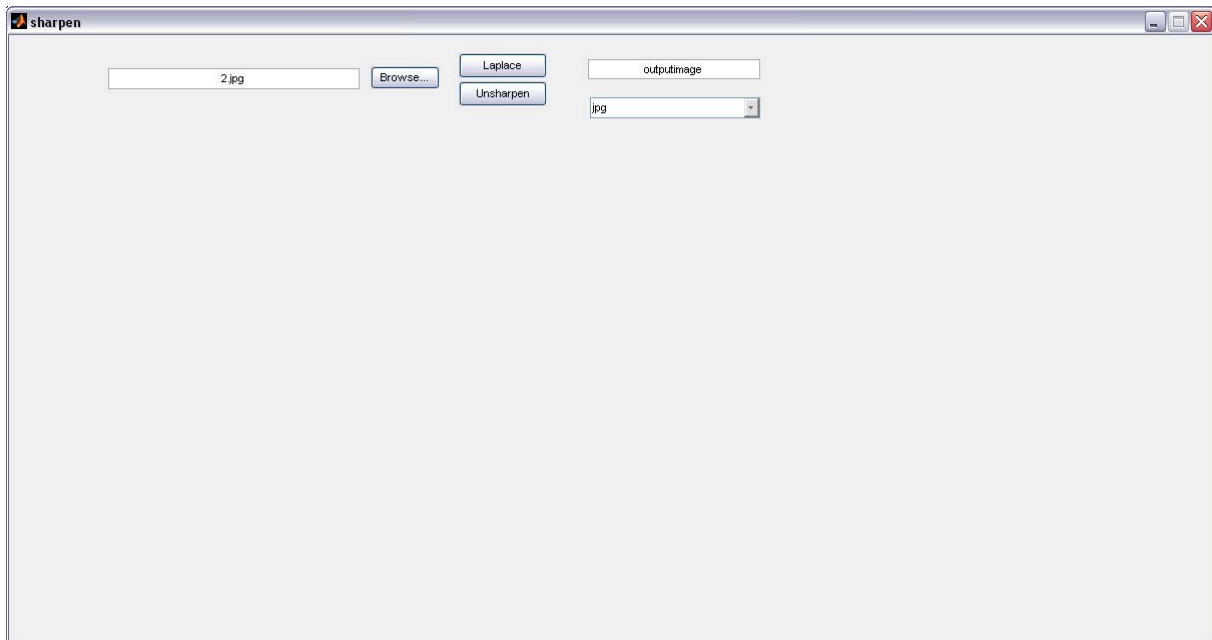
outputimage = inputimage;

for x=1:size(imResult,1)
    for y=1:size(imResult,2)
        if imResult(x,y,:) ~= 0
            outputimage(x,y,:) = imResult(x,y, :)*255;
        end
    end
end

figure, imshow(outputimage);
```

Laplace filter MATLAB code

GUI



In onze GUI kan elke filter apart gekozen worden. Met de Browse knop kan er naar een andere figuur omgeschakeld worden. Het resultaat wordt ook terug opgeslagen. De invoervelden werken niet, dit is nog een fout in de code.

```
% --- Executes on button press in btBrowse.
function btBrowse_Callback(hObject, eventdata, handles)
% hObject    handle to btBrowse (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
image_file = get(handles.tx_file,'String');
if ~isempty(image_file),
    image_file = [image_file '\\'];
end
[file,path] = uigetfile([image_file '*.jpg'],'Select a base image');

% if dbdir,

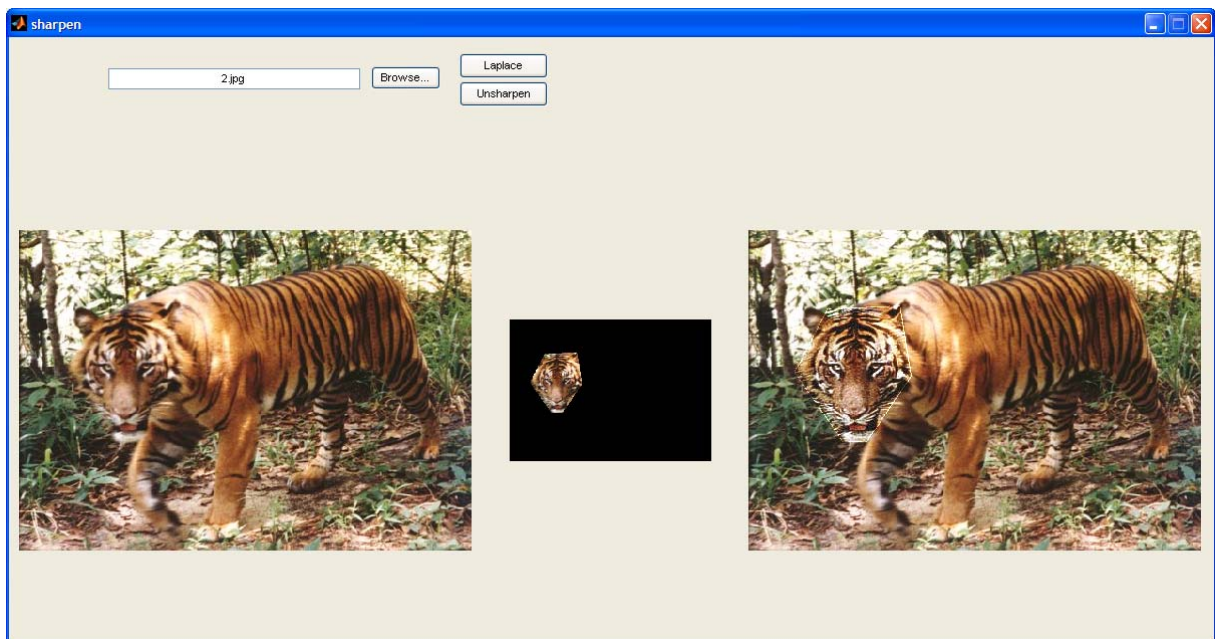
try
    set(handles.tx_file,'string',[path file]);
    info = imfinfo([path file]);
    im_original=imread(char(image_file));
    set(handles.width_edit,'string',info.Width);
    set(handles.height_edit,'string',info.Height);
    imshow([path file])
    image(im_original);
catch
    %error
end
```

Browse functie

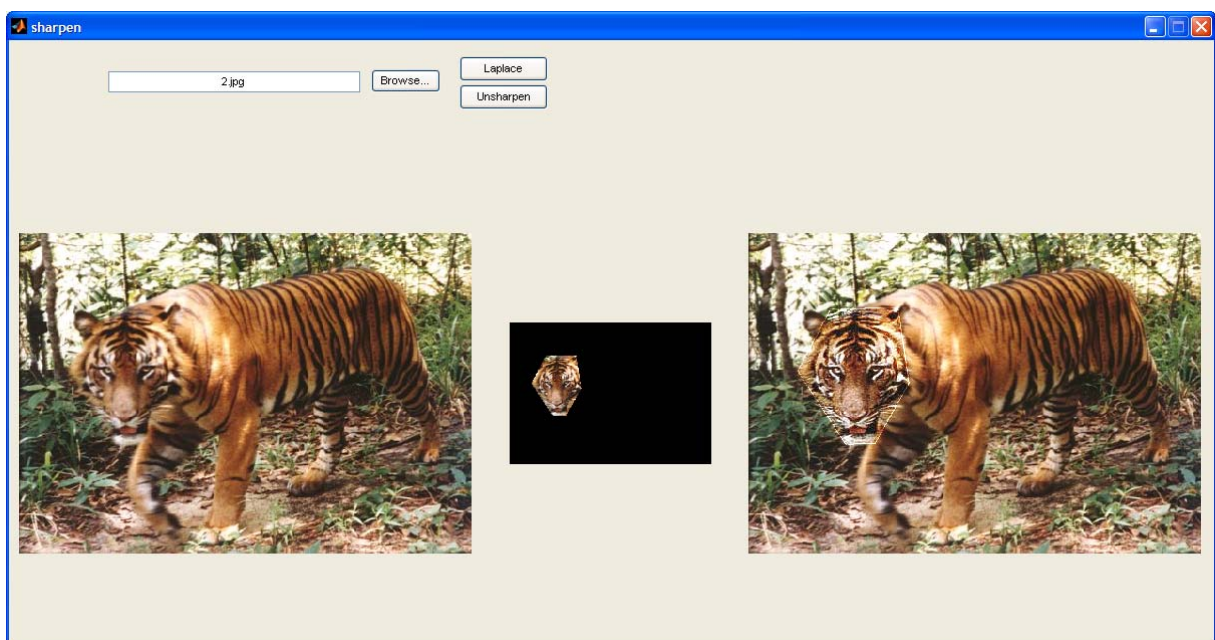
```
%outputfilename = get(handles.outputname,'String');
imwrite(c, 'outputunsharpen.jpg','jpg');
```

Image save

Laplace filter:



Sharpen filter:



Problemen

We hebben geen noemenswaardige problemen ondervonden buiten het probleem met de image save, de tutorial / begeleiding was zeer duidelijk.