



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

SESI 2020/2021 SEMESTER 1

SCSV3213 – SECTION 2

FUNDAMENTAL OF IMAGE PROCESSING

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ASSIGNMENT 4

Document Scanner

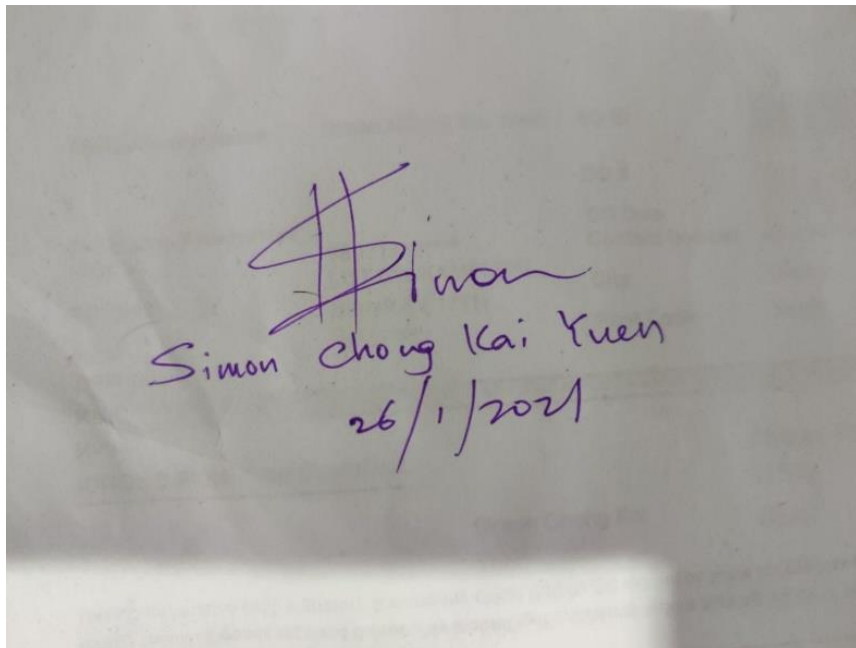
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Clive Lai Yi Cheng (A19EC3019)

Ng Shu Yu (A19EC3031)

Pipeline Process

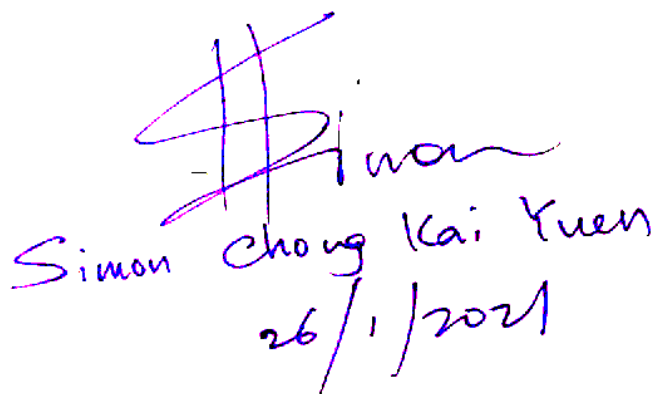


Input image

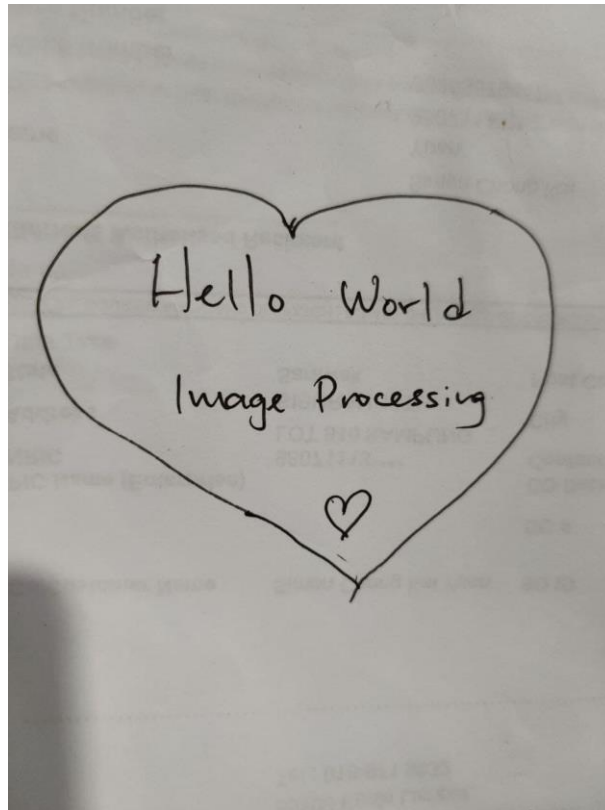
Threshold
value = 100



```
my_image = imread(pickedimage);  
my_image = my_image(:,:,:);  
processed_img = my_image;  
processed_img(my_image >= value1) = 255;  
processed_img(my_image < value1) = 0;  
imshow(processed_img, []), title('Processed  
result')
```



Output image

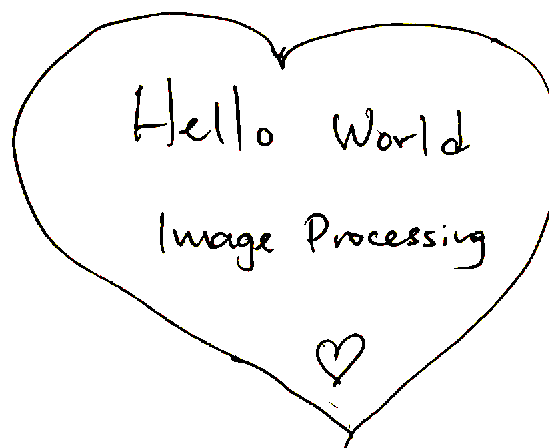


Input image

Threshold
value = 90

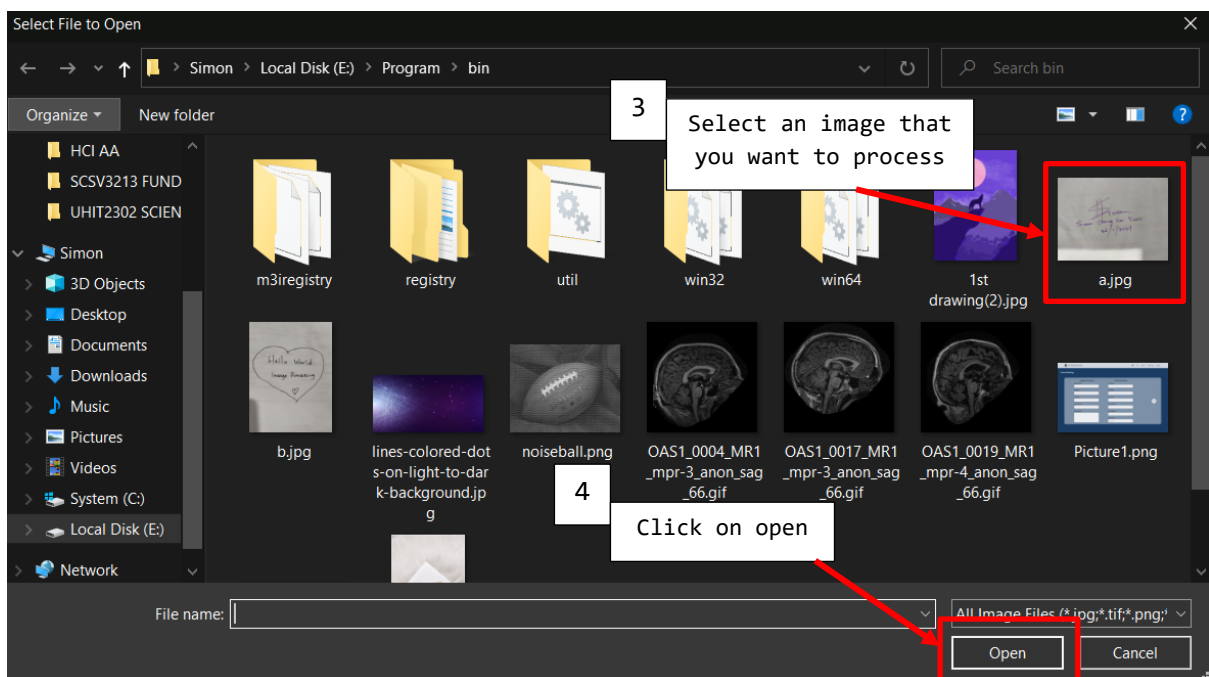


```
my_image = imread(pickedimage);  
my_image = my_image(:,:,:);  
processed_img = my_image;  
processed_img(my_image >= value1) = 255;  
processed_img(my_image < value1) = 0;  
imshow(processed_img, []), title('Processed  
result')
```

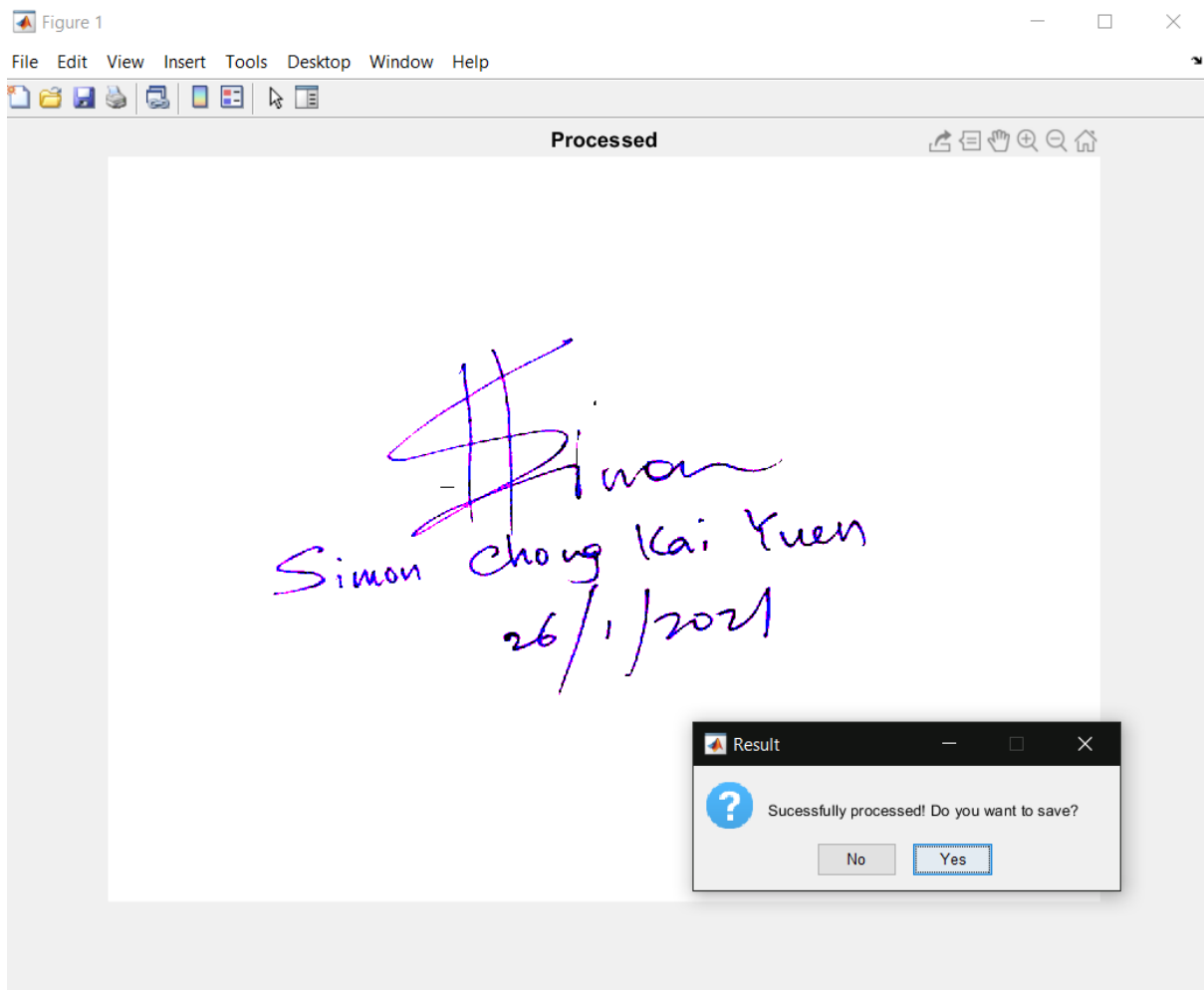


Output image

1.



3. Then you will get a processed image and you may press save button to save it



To watch a demonstration video, please click this link

<https://youtu.be/8HPntxU0UkA>

Script

```
classdef Simon_IP_Project < matlab.apps.AppBase

    % Properties that correspond to app components
    properties (Access = public)
        UIFigure                matlab.ui.Figure
        Image                    matlab.ui.control.Image
        KlikcktochooseanImageButton  matlab.ui.control.Button
        SlidetheslidertohaveabetterouputSliderLabel  matlab.ui.control.Label
        SlidetheslidertohaveabetterouputSlider  matlab.ui.control.Slider
        DevelopedbySimonChongKaiYuenCliveLaiYiChengNgShuYuLabel
        matlab.ui.control.Label
        ThisappcanprocessasnappedimageintodocumentimageLabel
        matlab.ui.control.Label
        BackgroundphotoillustratedbySimonrightreserveLabel
        matlab.ui.control.Label
    end

    methods (Access = private)
        function updateimage(app,pickedimage)
            value1 = app.SlidetheslidertohaveabetterouputSlider.Value; %input
            % threshold value by user
            my_image = imread(pickedimage);
            my_image = my_image(:,:,:);
            processed_img = my_image;
            processed_img(my_image>=value1) = 255;
            processed_img(my_image<value1) = 0;
            imshow(processed_img,[]), title('Processed result') %If you
            % specify an empty matrix ([ ]),
            % then imshow uses a display range of [min(I(:)) max(I(:))].
            % In other words, the minimum value in I is black, and the maximum
            % value is white.
            promptMessage = sprintf('Sucessfully processed! Do you want to
            save?');
            button = questdlg(promptMessage, 'Result', 'No', 'Yes', 'Yes');
            if strcmpi(button, 'Yes')
                imsave();
            end
        end
    end

    end

    % Callbacks that handle component events
    methods (Access = private)

        % Button pushed function: KlikcktochooseanImageButton
```

Algorithm of the
image processing

```

function KlikcktochooseanImageButtonPushed(app, event)
    % Display uigetfile dialog
    filterspec = {'*.jpg;*.tif;*.png;*.gif', 'All Image Files'};
    [f, p] = uigetfile(filterspec);

    % Make sure user didn't cancel uigetfile dialog
    if (ischar(p))
        fname = [p f];
        updateimage(app, fname);
    end
end
end
end

```

Let user to choose an
image from local storage

```

% Component initialization
methods (Access = private)

```

```

% Create UIFigure and components
function createComponents(app)

```

```

    % Create UIFigure and hide until all components are created
    app.UIFigure = uifigure('Visible', 'off');
    app.UIFigure.Position = [100 100 906 512];
    app.UIFigure.Name = 'UI Figure';

```

```

    % Create Image
    app.Image = uiimage(app.UIFigure);
    app.Image.Position = [-52 1 1015 512];
    app.Image.ImageSource = 'star.jpg';

```

```

    % Create KlikcktochooseanImageButton
    app.KlikcktochooseanImageButton = uibutton(app.UIFigure, 'push');
    app.KlikcktochooseanImageButton.ButtonPushedFcn =
createCallbackFcn(app, @KlikcktochooseanImageButtonPushed, true);
    app.KlikcktochooseanImageButton.IconAlignment = 'center';
    app.KlikcktochooseanImageButton.Position = [383 53 122 57];
    app.KlikcktochooseanImageButton.Text = {'Klikck to choose '; 'an
image'};

```

```

    % Create SlidetheslidertohaveabetteroutputSliderLabel
    app.SlidetheslidertohaveabetteroutputSliderLabel =
uilabel(app.UIFigure);

    app.SlidetheslidertohaveabetteroutputSliderLabel.HorizontalAlignment = 'right';
    app.SlidetheslidertohaveabetteroutputSliderLabel.FontSize = 16;
    app.SlidetheslidertohaveabetteroutputSliderLabel.FontColor = [1 1
1];
    app.SlidetheslidertohaveabetteroutputSliderLabel.Position = [321
172 273 22];

```

```
app.SlidetheslidertohaveabetterouputSliderLabel.Text = 'Slide the  
slider to have a better ouput';
```

```
% Create SlidetheslidertohaveabetterouputSlider  
app.SlidetheslidertohaveabetterouputSlider =  
uislider(app.UIFigure);  
app.SlidetheslidertohaveabetterouputSlider.Limits = [0 200];  
app.SlidetheslidertohaveabetterouputSlider.MajorTicks = [0 10 20  
30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200];  
app.SlidetheslidertohaveabetterouputSlider.FontSize = 16;  
app.SlidetheslidertohaveabetterouputSlider.FontColor = [1 1 1];  
app.SlidetheslidertohaveabetterouputSlider.Position = [31 270 834  
3];
```

```
% Create DevelopedbySimonChongKaiYuenCliveLaiYiChengNgShuYuLabel  
app.DevelopedbySimonChongKaiYuenCliveLaiYiChengNgShuYuLabel =  
uilabel(app.UIFigure);
```

```
app.DevelopedbySimonChongKaiYuenCliveLaiYiChengNgShuYuLabel.FontColor = [1 1  
1];
```

```
app.DevelopedbySimonChongKaiYuenCliveLaiYiChengNgShuYuLabel.Position = [18 22  
129 69];
```

```
app.DevelopedbySimonChongKaiYuenCliveLaiYiChengNgShuYuLabel.Text =  
{'Developed by: '; ' '; 'Simon Chong Kai Yuen'; 'Clive Lai Yi Cheng'; 'Ng Shu  
Yu'};
```

```
% Create ThisappcanprocessasnappedimageintodocumentimageLabel  
app.ThisappcanprocessasnappedimageintodocumentimageLabel =  
uilabel(app.UIFigure);  
app.ThisappcanprocessasnappedimageintodocumentimageLabel.FontColor  
= [1 1 1];  
app.ThisappcanprocessasnappedimageintodocumentimageLabel.Position  
= [18 470 334 22];  
app.ThisappcanprocessasnappedimageintodocumentimageLabel.Text =  
'This app can process a snapped image into document image';
```

```
% Create BackgroundphotoillustratedbySimonrightreserveLabel  
app.BackgroundphotoillustratedbySimonrightreserveLabel =  
uilabel(app.UIFigure);  
app.BackgroundphotoillustratedbySimonrightreserveLabel.FontColor =  
[1 1 1];  
app.BackgroundphotoillustratedbySimonrightreserveLabel.Position =  
[607 12 287 22];  
app.BackgroundphotoillustratedbySimonrightreserveLabel.Text =  
'Background photo illustrated by Simon, right reserve';
```

```
% Show the figure after all components are created  
app.UIFigure.Visible = 'on';
```



```

        end
    end

% App creation and deletion
methods (Access = public)

    % Construct app
    function app = Simon_IP_Project

        % Create UIFigure and components
        createComponents(app)

        % Register the app with App Designer
        registerApp(app, app.UIFigure)

        if nargin == 0
            clear app
        end
    end

% Code that executes before app deletion
function delete(app)

    % Delete UIFigure when app is deleted
    delete(app.UIFigure)
end
end
end
end

```