CA2 – Document scanner with OpenCV and Python (60 % of end of year mark)

**Out:** 21/03/22

**In:** 25/4/22

**Review:** Week: 02/4/22

# Brief

* Create a simple document scanner using OpenCv.
* Save scanned imaged by pressing just a button on the keyboard
* Automatically rotate scanned image to be portrait or landscape
* Add an optional watermark to the image

# Learning Outcomes

* L01: Design structured code in a high level language
* L02: Utilise object oriented paradigms in systems design
* L03: Develop appropriate user interfaces

# Proccess:

## Description of Concept:

* + You will design a document scanner that converts an image into a processed document.
  + The program will detect edges and contours.
  + It will detect the corners of the document, rotate the document to be straight and save it as a separate graphic on pressing a button.
  + It will have the option to include a watermark with a timestamp on the graphic image

## Rationale

This CA is designed to acquaint you with the GUI programming techniques in Python. Constructs such as user input, functions, looping and decision‐making GUI programming will be employed.

The OpenCV library will be used to capture camera data and process the capture.

Your program should make use of:

* + - Error handling
    - Functions
    - Importing of modules
    - A Graphical User Interface (GUI) using Tkinter or OpenCV

It is suggested that each task be completed step by step as you will be marked on the functionality of each component of this assignment.

This means that first you should focus on individually solving the problems at hand as separate scripts, then try and implement them in one complete script and finally design and build a basic GUI with which you can read input values and return output values.

# Weighting and Due Date

* + - This assignment is worth 60% of the overall module
    - A fully commented Python script should be uploaded to Github classroom by 12 noon on 25/4/22.
    - Github classroom instructions will be issued at a later stage in class.
    - Include any rough work scripts that you deem relevant to the submission

Marks will be awarded for:

* + - Each part of the document scanner functioning correctly
    - Implementation of error handling where relevant
    - Use of functions and efficient code
    - Clear descriptions of the code through the use of comments
    - Implementation of the UI
    - Evidence of further independent research

# Documentation:

Create a small screencast (2 minutes max that showcases your project).

You are required to submit a short report, which discusses the design, implementation and testing of the program, including an explanation of how your code achieved the requirements. This report is to include a Title page, Table of Contents, screen shots, code listing with sample outputs and references. A typical report will be provided on Blackboard.

Describe your project‐management processes. This report should be sufficiently detailed to allow developers unfamiliar with the project to continue working and contributing to it.

The report is to be written as a MS Word document formatted using a 12pt font, single line spacing. You must reference all sources of information used using APA citation. Where use of un‐ referenced quotations or text from other sources is detected your report will be rejected as it is considered a form of plagiarism. The report is to be submitted as a .pdf file via TurnItIn on Blackboard Learning Management System. TurnItIn is a service that will generate an originality score for your document and helps you monitor if your document contains un‐referenced source material.

In the week of 2/5/22‐ you will need to present and demonstrate the project in class. Ensure that you have tested the application beforehand.

# Submission

The project will be submitted using Github classroom. Further details to this in a separate class. Your code is the major contribution to this CA. The code should be well commented. Your program code should be readable, including proper indentation and spacing. You will need to demonstrate that this is your own work. "Found" or "shared" code is not an acceptable submission and will lead to a fail.