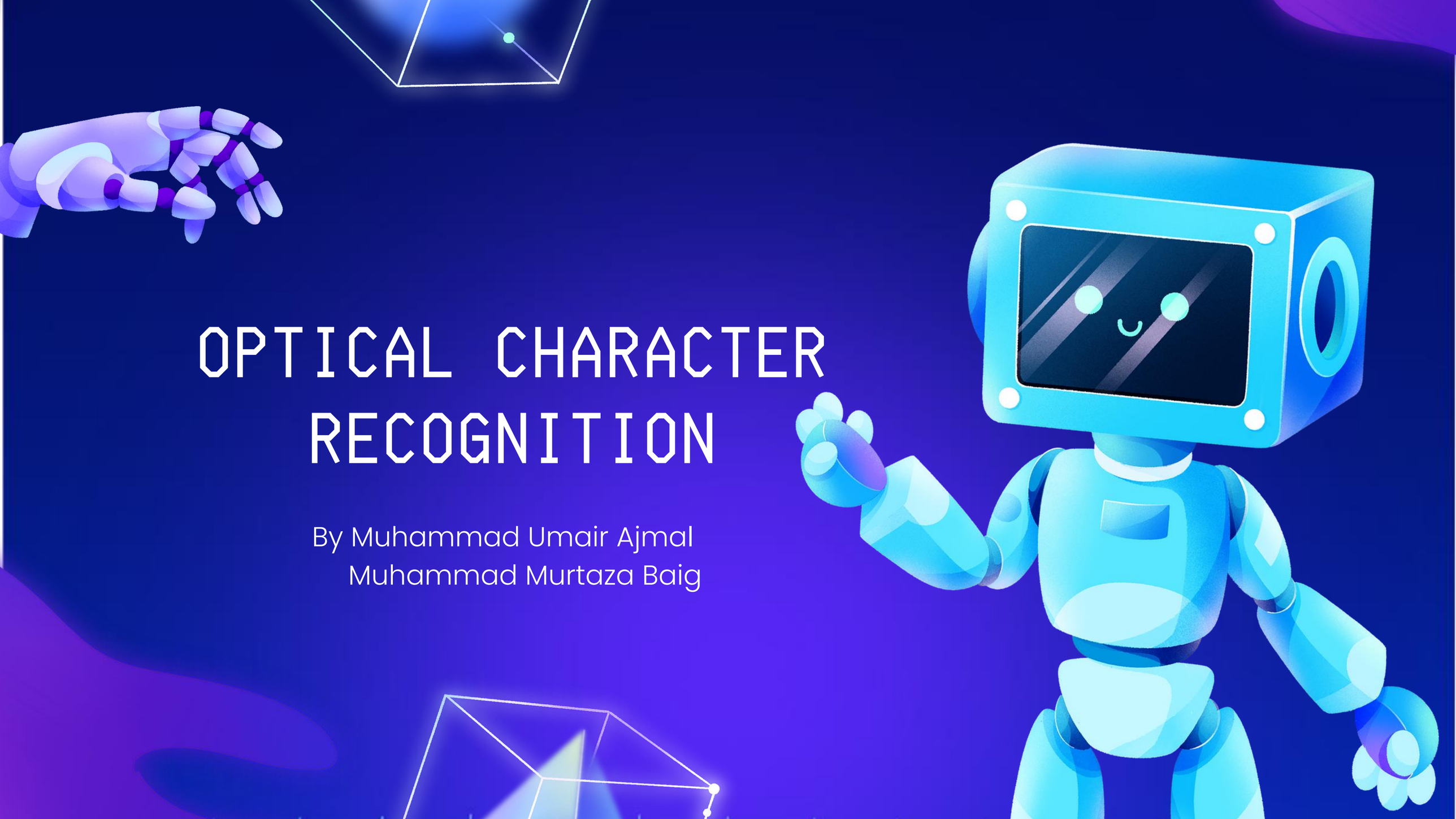
OPTICAL CHARACTER RECOGNITION

By Muhammad Umair Ajmal
Muhammad Murtaza Baig



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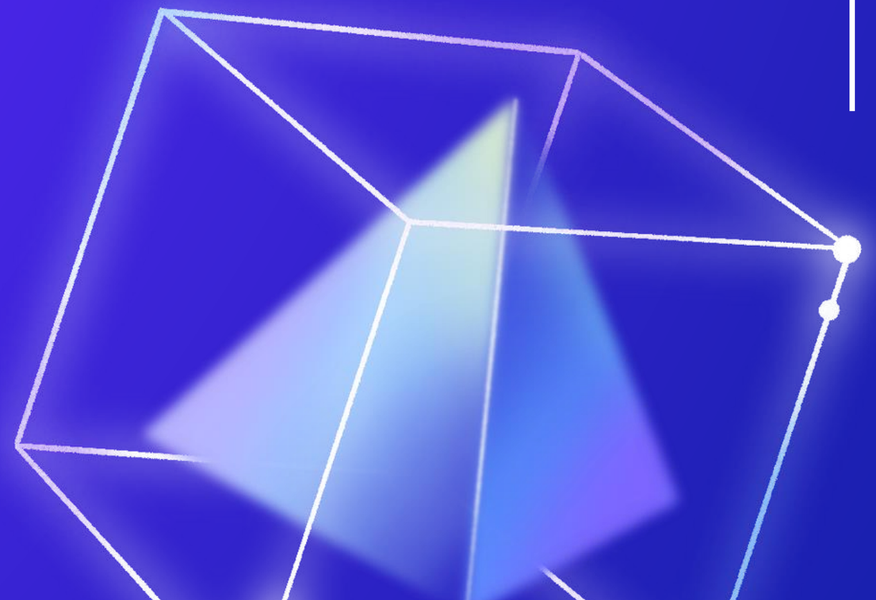
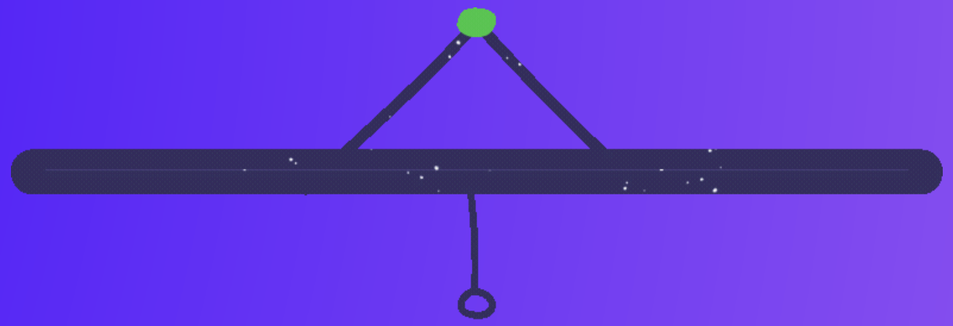


INTRODUCTION



Our project is focused on Optical Character Recognition (OCR) in C++, which is used to extract text from photographs. This talk will highlight our strategy, problems, and results in designing an efficient text recognition system in C++.

PROJECT OBJECTIVES

ENHANCING IMAGE CLARITY USING OPENCV

Utilize OpenCV functionalities to preprocess images before OCR processing.

INTEGRATING TESSERACT OCR WITH ENHANCED IMAGE PREPROCESSING

Incorporate the Tesseract OCR engine into the project framework for text extraction from preprocessed images

IMPROVING OCR EFFICIENCY & ACCURACY

Target the enhancement of OCR efficiency by integrating refined image preprocessing techniques

PROJECT UTILITIES

IMAGE PREPROCESSING

INTEGRATION COMPONENTS

USER INTERFACE

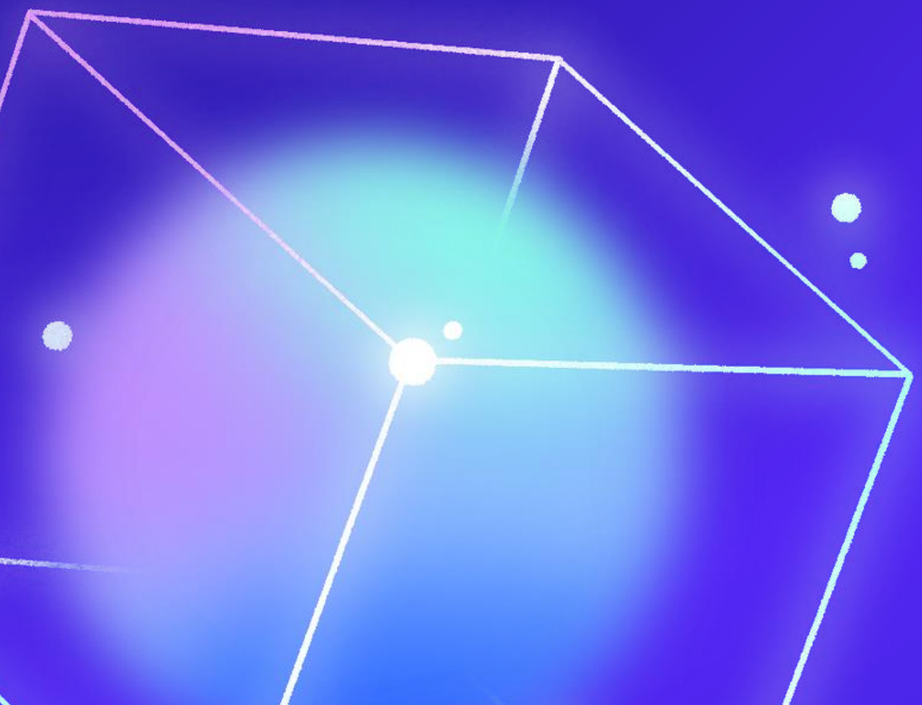
TEXT GENERATION

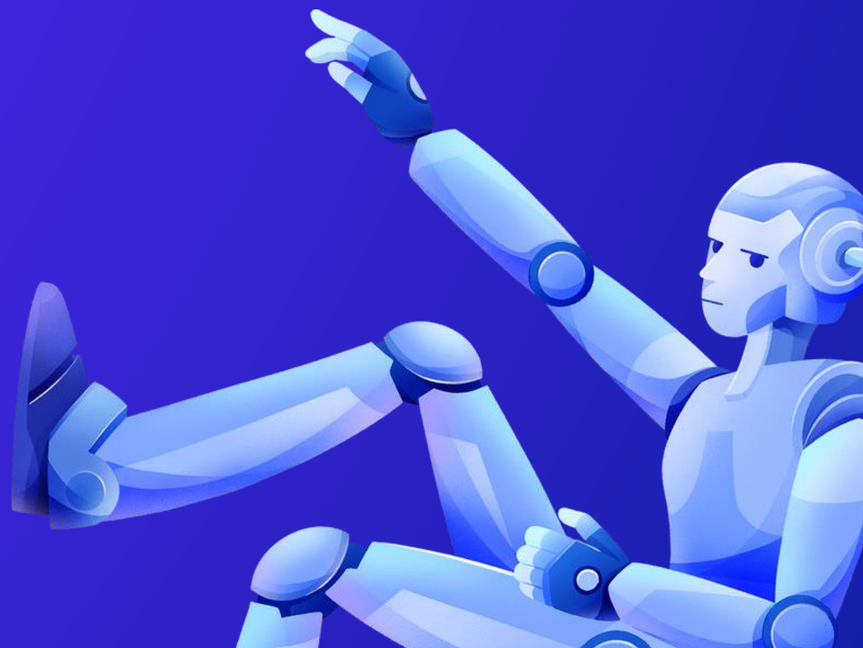
FILE HANDLING

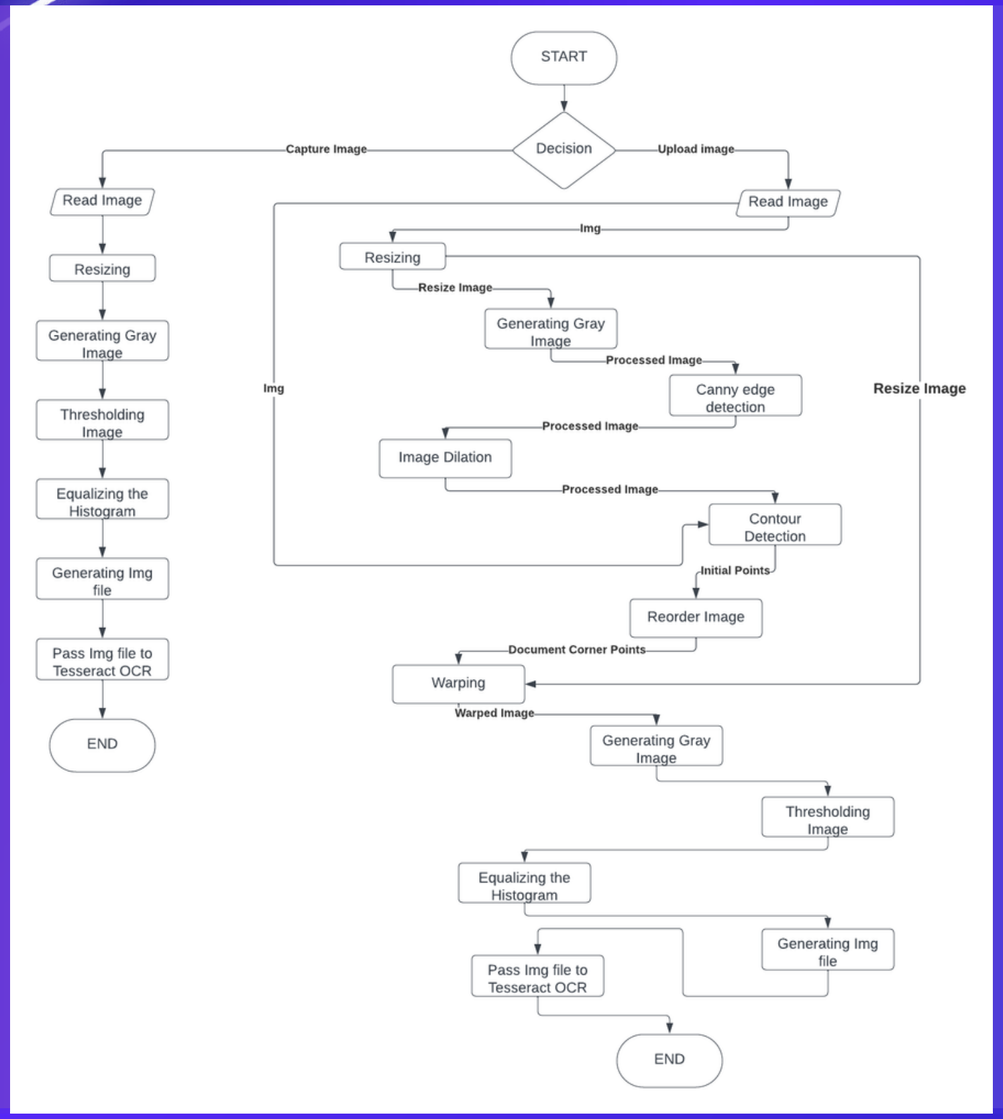
SCOPE OF THE PROJECT

- Document Digitization
- Automatic Text Recognition
- Aiding the Visually Impaired
- Enhancing Search Capabilites

SYSTEMATIC DIAGRAM






START
Decision
Capture Image
Upload image
Read Image
Resizing
Generating Gray Image
Thresholding Image
Equalizing the Histogram
Generating Img file
Pass Img file to Tesseract OCR
END
Read Image
Img
Resizing
Resize Image
Generating Gray Image
Processed Image
Canny edge detection
Processed Image
Image Dilation
Processed Image
Contour Detection
Initial Points
Reorder Image
Document Corner Points
Warping
Warped Image
Generating Gray Image
Thresholding Image
Equalizing the Histogram
Generating Img file
Pass Img file to Tesseract OCR
END
Img
Resize Image

LANGUAGE AND LIBRARIES

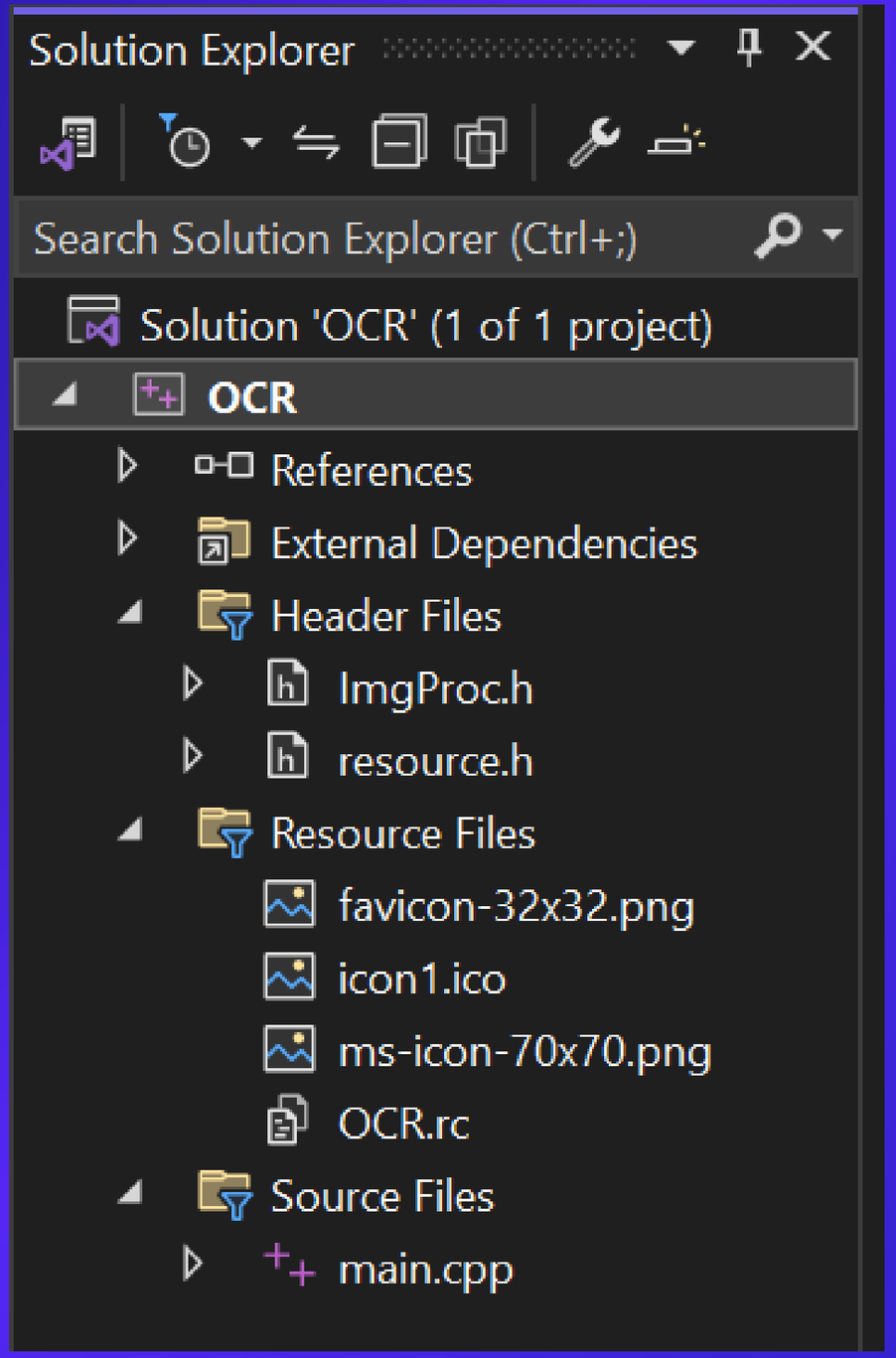
Language:

- C++

Libraries:

- OpenCV
- wxWidget
- Tesseract Engine

PROJECT FOLDER TREE STRUCTURE


Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'OCR' (1 of 1 project)
OCR
References
External Dependencies
Header Files
ImgProc.h
resource.h
Resource Files
favicon-32x32.png
icon1.ico
ms-icon-70x70.png
OCR.rc
Source Files
main.cpp

Following Screens are required to be make compatible with Chrome 43. Need to make sure all functionalities of the screens should work with it.

Store Dashboard
My Deliveries
Stock Order/ Check Out
Print In Stock Order / Check Out
My Print In Store Orders
Your Profile
Contact Us

Contour Detection

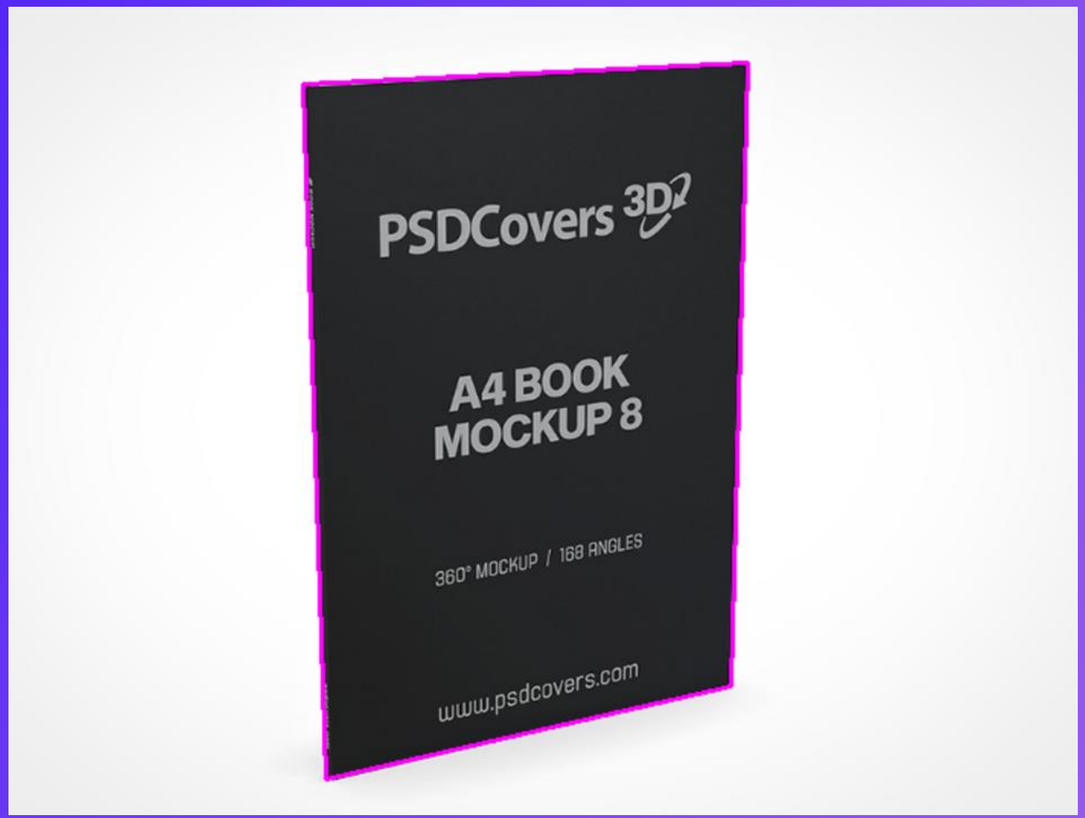
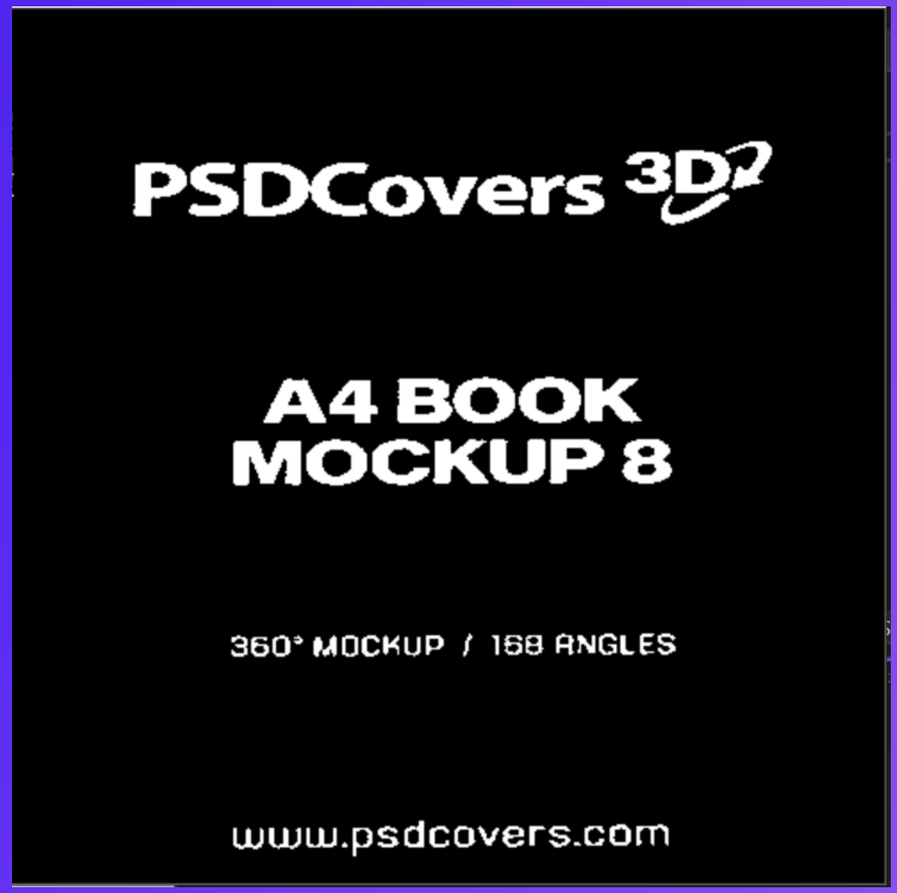


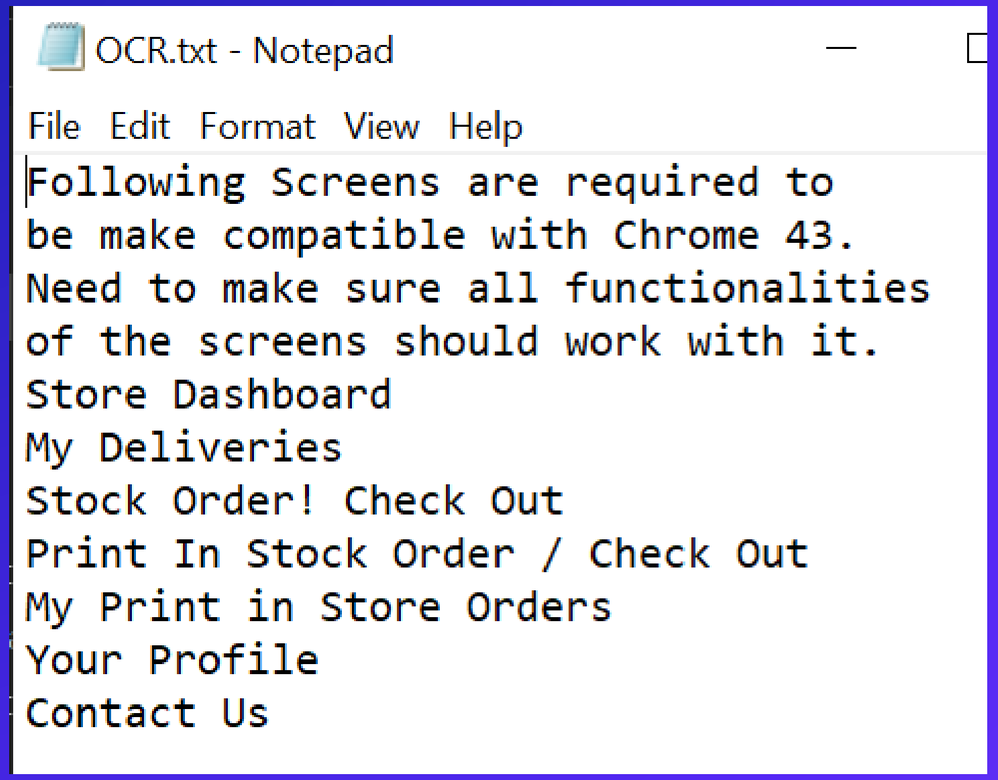
IMAGE THRESHOLDING AND EQUALIZED HISTOGRAM

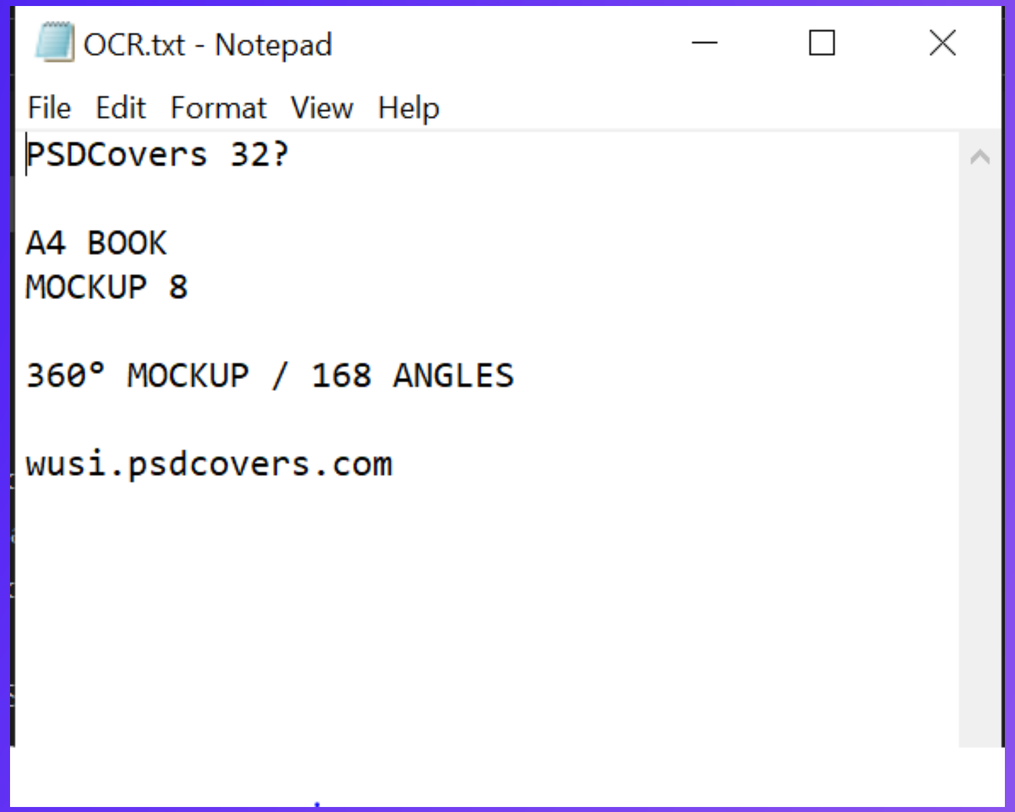
Following Screens are required to be make compatible with Chrome 43. Need to make sure all functionalities of the screens should work with it.

Store Dashboard
My Deliveries
Stock Order/ Check Out
Print In Stock Order / Check Out
My Print In Store Orders
Your Profile
Contact Us



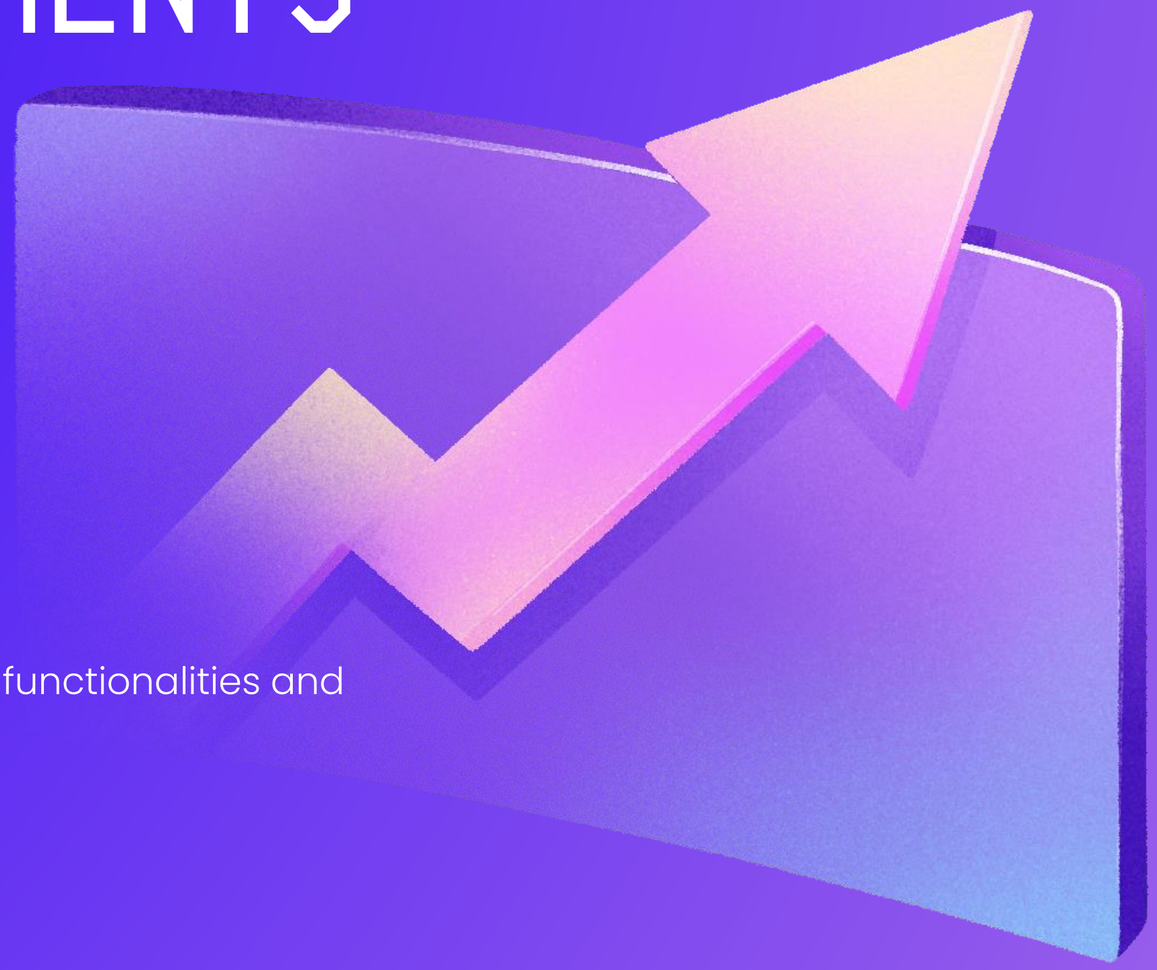
TEXT FILE GENERATION





LIMITATIONS AND POSSIBLE IMPROVEMENTS

In this project, while coding and taking decision we have take contour detection as an only option for the warp perspective and letter found that now our picture must contain a solid black background in order to detect its contour for the warp perspective and transformation. Secondly camera option is useless due to the quality it provide. Third, it only detects computer written text.



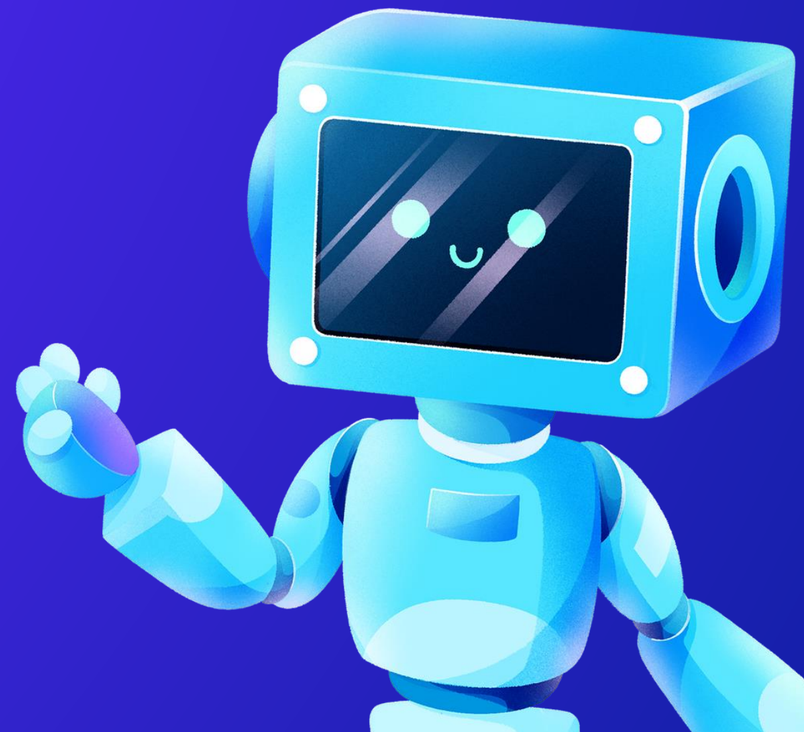
Improvements

We can bring improvement by introducing more text detection functionalities and by advanced image processing.

GITHUB REPOSITORY

https://github.com/Murti69/OCR.git

LIVE DEMO !



REFERENCES

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https://www.youtube.com/watch?v=BjQhp0eHmJw&list=PLFk1_lkqT8MbVOcwEppCPfjGOGhLvcf9G

https://medium.com/building-a-simple-text-correction-tool/basic-ocr-with-tesseract-and-opencv-34fae6ab3400


THANK YOU!