## **References:**

# May 23rd

https://www.geeksforgeeks.org/working-images-python/

https://www.geeksforgeeks.org/python-pil-image-save-method/

https://www.geeksforgeeks.org/python-pil-image-convert-method/

https://github.com/imneonizer/Image-Background-Filter-with-Python

https://towardsdatascience.com/building-a-simple-text-recognizer-in-python-93e453ddb759

https://github.com/madmaze/pytesseract/blob/master/README.rst

https://pillow.readthedocs.io/en/stable/installation.html#basic-installation

https://www.projectpro.io/recipes/what-is-image-boxes-function-pytesseract-explain-with-example

https://www.edureka.co/community/163488/pytesseract-tesseractnotfound-error-tesseract-installed

https://stackoverflow.com/questions/50951955/pytesseract-tesseractnotfound-error-tesseract-is-not-install ed-or-its-not-i

https://stackoverflow.com/questions/247770/how-to-retrieve-a-modules-path

https://www.projectpro.io/recipes/what-is-pvtesseract-pvthon-library-and-do-vou-install-it

https://medium.com/quantrium-tech/installing-and-using-tesseract-4-on-windows-10-4f7930313f82

https://www.topcoder.com/thrive/articles/python-for-character-recognition-tesseract

https://snyk.io/advisor/python/pytesseract/functions/pytesseract.image\_to\_boxes

https://gist.github.com/omairaasim/ac4d23f511644ad8a6ed1b2f58b79130

https://www.askpython.com/python/examples/denoising-images-in-python

https://builtin.com/data-science/python-ocr

https://stackoverflow.com/questions/20831612/getting-the-bounding-box-of-the-recognized-words-using-python-tesseract

https://pillow.readthedocs.io/en/stable/reference/ImageChops.html

https://pillow.readthedocs.io/en/stable/reference/Image.html#

https://stackoverflow.com/questions/63098792/how-to-remove-noise-from-an-image-using-pillow

https://www.kaggle.com/code/chanduanilkumar/adding-and-removing-image-noise-in-python

https://www.educative.io/answers/what-are-some-basic-functions-of-image-processing-using-pil

https://www.educative.io/answers/what-are-some-basic-functions-of-image-processing-using-pil

https://towardsdatascience.com/building-a-simple-text-recognizer-in-python-93e453ddb759

https://linuxhint.com/install-tesseract-windows/

https://github.com/UB-Mannheim/tesseract/wiki

## May 25th

https://docs.opencv.org/4.x/dd/d3b/tutorial\_py\_svm\_opencv.html

https://docs.opencv.org/4.x/d4/db1/tutorial\_py\_svm\_basics.html

https://docs.opencv.org/4.x/de/d4d/tutorial py kmeans understanding.html

https://docs.opencv.org/4.x/d3/d02/tutorial\_pv\_svm\_index.html

https://www.tutorialspoint.com/how-to-change-the-contrast-and-brightness-of-an-image-using-opency-in-nython

https://stackoverflow.com/questions/54213554/how-to-get-the-intensity-darkness-of-all-the-text-in-an-image-to-one-level

https://www.javatpoint.com/fastnlmeansdenoising-in-python

https://docs.opencv.org/4.x/d1/d79/group photo denoise.html

https://docs.opencv.org/4.x/d5/d69/tutorial\_py\_non\_local\_means.html

https://builtin.com/data-science/python-image-processing

https://pvpi.org/project/opency-pvthon/

https://docs.opencv.org/4.x/d3/df2/tutorial py basic ops.html

https://docs.opencv.org/4.x/d0/d86/tutorial\_py\_image\_arithmetics.html

https://docs.opencv.org/4.x/dc/d71/tutorial\_py\_optimization.html

https://docs.opencv.org/4.x/d7/d16/tutorial py table of contents core.html

https://docs.opencv.org/4.x/df/d9d/tutorial\_py\_colorspaces.html

https://docs.opencv.org/4.x/da/d6e/tutorial\_py\_geometric\_transformations.html

https://www.tutorialspoint.com/converting-an-image-from-colour-to-grayscale-using-opencv#:~:text=Step

%201%3A%20Import%20OpenCV.,cvtcolor()%20function.

https://pyimagesearch.com/2021/05/12/adaptive-thresholding-with-opency-cv2-adaptivethreshold/

https://www.geeksforgeeks.org/python-thresholding-techniques-using-opency-set-2-adaptive-thresholding/

 $\underline{https://stackoverflow.com/questions/47368311/on-which-basis-block-size-value-is-given-in-adaptive-threshold}$ 

https://medium.com/featurepreneur/dive-deeper-into-opencys-adaptive-thresholding-3f29dda8c908

 $\underline{https://www.projectpro.io/recipes/what-is-pytesseract-python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it\#:\sim:text=Python-library-and-do-you-install-it#:$ 

n%2Dtesseract%20is%20an%20optical,writing%20it%20to%20a%20file.

https://docs.opencv.org/4.x/d7/d4d/tutorial\_pv\_thresholding.html

https://docs.opencv.org/4.x/da/d22/tutorial\_py\_canny.html

https://docs.opencv.org/4.x/d2/d96/tutorial py table of contents imgproc.html

https://docs.opencv.org/4.x/df/d54/tutorial py features meaning.html

https://docs.opencv.org/4.x/db/d27/tutorial py table of contents feature2d.html

https://docs.opencv.org/4.x/d5/d26/tutorial\_py\_knn\_understanding.html

### May 26th

https://docs.opencv.org/4.x/d5/d26/tutorial\_pv\_knn\_understanding.html

https://www.geeksforgeeks.org/python-opency-cv2-imwrite-method/

https://www.geeksforgeeks.org/python-opency-cy2-imshow-method/

https://medium.com/mlearning-ai/image-zoom-using-computer-vision-using-opency-and-python-leeaee5 3eeb8

https://stackoverflow.com/questions/35180764/opencv-python-image-too-big-to-display

https://stackoverflow.com/questions/14556545/why-opency-using-bgr-colour-space-instead-of-rgb

https://stackoverflow.com/questions/51277907/opency-circle-color

https://docs.opencv.org/4.x/dc/da5/tutorial py drawing functions.html

https://thinkinfi.com/image-to-string-using-tesseract-ocr-opency-python/

https://snyk.io/advisor/python/pytesseract/functions/pytesseract.Output.DICT

https://nanonets.com/blog/ocr-with-tesseract/

https://www.w3schools.com/python/ref string splitlines.asp

# May 26th

https://stackoverflow.com/questions/50533775/zooming-functionality-in-opency-imshow-in-windows

https://levelup.gitconnected.com/python-3-ways-to-display-images-14e06ae1b33c

https://www.geeksforgeeks.org/python-opency-cv2-imread-method/

https://stackoverflow.com/questions/56008240/opencv-changes-image-when-loading-why

https://pyimagesearch.com/2017/01/02/rotate-images-correctly-with-opency-and-python/

https://note.nkmk.me/en/python-opency-imread-imwrite/

https://pythonprogramming.net/loading-images-python-opency-tutorial/

https://stackoverflow.com/questions/72277718/cv2-resize-changes-color-mode-of-my-image

https://learnopencv.com/image-resizing-with-opencv/

https://www.tutorialspoint.com/how-to-find-the-hsv-values-of-a-color-using-opency-python#:~:text=In%

20this%20example%2C%20we%20find,is%20%5B0%2C255%2C0%5D.

https://www.geeksforgeeks.org/color-identification-in-images-using-python-opency/

https://pvimagesearch.com/2021/04/28/opency-color-spaces-cy2-cytcolor/

https://www.codingforentrepreneurs.com/blog/open-cv-python-change-video-resolution-or-scale/

https://pyimagesearch.com/2021/01/20/opency-resize-image-cy2-resize/

https://learnopencv.com/read-display-and-write-an-image-using-opencv/

https://builtin.com/data-science/python-ocr

https://github.com/tesseract-ocr/tesseract/wiki#windows

https://builtin.com/data-science/python-ocr

https://basilchackomathew.medium.com/best-ocr-tools-in-python-4f16a9b6b116

https://keras-ocr.readthedocs.io/en/latest/

https://pythonrepo.com/repo/tesseract-ocr-tesseract-python-computer-vision

https://www.tutorialkart.com/opency/python/opency-python-gaussian-image-smoothing/

### May 27th

 $\frac{\text{https://stackoverflow.com/questions/75361327/using-pytesseract-for-hebrew-language-in-tables}{\text{https://stackoverflow.com/questions/44691829/pytesseract-foreign-language-extraction-using-python}{\text{https://www.projectpro.io/recipes/what-is-get-languages-function-pytesseract-explain-with-example}{\text{https://nanonets.com/blog/ocr-with-tesseract/\#:~:text=Pytesseract%20or%20Python%2Dtesseract%20is,image%20to%20text%20use%20cases.}$ 

#### May 29th

https://stackoverflow.com/questions/18262293/how-to-open-every-file-in-a-folder

https://www.geeksforgeeks.org/how-to-read-multiple-text-files-from-folder-in-python/

https://realpython.com/get-all-files-in-directory-python/

https://www.educba.com/opencv-load-image/

https://www.tutorialspoint.com/reading-an-image-using-python-opency-module

https://pyimagesearch.com/2021/01/20/opency-load-image-cy2-imread/

https://stackoverflow.com/questions/24564889/opencv-python-not-opening-images-with-imread

https://sanpreetai.medium.com/read-multiple-images-from-a-folder-using-python-cv2-725f0b0447d4

https://www.geeksforgeeks.org/how-to-iterate-through-images-in-a-folder-python/

## May 30th

https://answers.opencv.org/question/174551/how-to-show-transparent-images/

https://stackoverflow.com/questions/70138763/opencv-working-with-pictures-with-a-transparent-backgro und

https://www.tutorialkart.com/opencv/python/opencv-python-read-png-images-with-transparency-channel/https://www.blog.pythonlibrary.org/2021/02/23/drawing-shapes-on-images-with-python-and-pillow/#:~:text=Drawing%20Rectangles,-The%20rectangle()&text=def%20rectangle

https://www.geeksforgeeks.org/python-pil-imagedraw-draw-rectangle/

# May 31st

https://realpython.com/image-processing-with-the-python-pillow-library/

#### June 1st

https://nanonets.com/blog/ocr-with-tesseract/#:~:text=Tesseract%20OCR%20engine-,OCR%20with%20Pytesseract%20and%20OpenCV,image%20to%20text%20use%20cases.

https://www.klearstack.com/pytesseract-a-brief-guide-to-python-tesseract/

https://pyimagesearch.com/2022/01/31/correcting-text-orientation-with-tesseract-and-python/

https://gist.github.com/jarodsmk/4d3c0f19fba9c386cfec292513e946b4

https://indiantechwarrior.medium.com/optimizing-rotation-accuracy-for-ocr-fbfb785c504b

https://www.geeksforgeeks.org/text-detection-and-extraction-using-opency-and-ocr/

https://stackoverflow.com/questions/70613870/python-image-processing-noise-removal?rg=3

https://stackoverflow.com/questions/70613870/python-image-processing-noise-removal?rq=3

https://stackoverflow.com/questions/43232813/convert-opency-image-format-to-pil-image-format

https://uploadcare.com/blog/fast-import-of-pillow-images-to-numpy-opency-arrays/

https://fileinfo.com/extension/ias

https://www.filemagic.com/en/uncommon-files/ias-file-extension/ias-files-what-it-is-and-how-to-open-it/https://www.freecodecamp.org/news/file-handling-in-python/#:~:text=How%20to%20Create%20Files%2

0in,it%20will%20return%20an%20error.

https://flexiple.com/python/python-replace-character-in-string/

https://www.w3schools.com/python/python file write.asp

https://pyimagesearch.com/2020/08/03/tesseract-ocr-for-non-english-languages/

https://stackoverflow.com/questions/44691829/pytesseract-foreign-language-extraction-using-python

# June 5th

https://tesseract-ocr.github.io/tessdoc/tess3/TrainingTesseract2.html

 $\underline{\text{https://stackoverflow.com/questions/65572698/how-to-configure-pytesseract-to-support-text-detection-for-non-english-language}$ 

https://stackoverflow.com/questions/57069541/how-to-read-other-languages-with-pytesseract-on-python

https://github.com/tesseract-ocr/tesseract/issues/1275#issuecomment-360367865

https://groups.google.com/g/tesseract-ocr/c/7D6ab38Yua8?pli=1

https://python-forum.io/thread-35526.html

https://stackoverflow.com/questions/36746902/using-multiple-languages-in-pytesser

https://github.com/tesseract-ocr/tesseract/issues/2562

https://pyimagesearch.com/2020/08/03/tesseract-ocr-for-non-english-languages/

https://www.gcptutorials.com/post/how-to-use-pytesseract-for-non-english-languages

https://stackoverflow.com/questions/44691829/pytesseract-foreign-language-extraction-using-python

https://www.pythonstudio.us/object-oriented/handling-the-bom-in.html

https://bugs.python.org/issue44510

https://levelup.gitconnected.com/a-beginners-guide-to-tesseract-ocr-using-pytesseract-23036f5b2211

https://itecnote.com/tecnote/python-unicodedecodeerror-with-tesseract-ocr-in-python/

https://snyk.io/advisor/python/pytesseract/functions/pytesseract.image to string

https://stackoverflow.com/questions/32927631/pytesseract-unicodedecodeerror-charmap-codec-cant-decode-byte

### June 7th

https://pyimagesearch.com/2020/08/03/tesseract-ocr-for-non-english-languages/

https://github.com/tesseract-ocr/tesseract/issues/1579

https://tesseract-ocr.github.io/tessdoc/Data-Files-in-different-versions.html

https://ocrmypdf.readthedocs.io/en/latest/languages.html

 $\frac{\text{https://stackoverflow.com/questions/24379781/how-can-i-run-tesseract-with-multiple-languages-one-time}{\#:\sim:text=Since\%20tesseract\%203.02\%20it\%20is,specified\%2C\%20separated\%20by\%20plus\%20characters.}$ 

https://python-forum.io/thread-35526.html

 $\frac{https://learn.microsoft.com/en-us/previous-versions/troubleshoot/winautomation/process-development-tips/image-processing/tesseract-ocr-in-multiple-language}$ 

### June 12th

https://www.geeksforgeeks.org/python-os-path-exists-method/

https://www.freecodecamp.org/news/creating-a-directory-in-python-how-to-create-a-folder/

https://pynative.com/python-create-file/

#### June 13th

https://www.geeksforgeeks.org/command-line-arguments-in-python/

https://tesseract-ocr.github.io/tessdoc/Data-Files#data-files-for-version-400-november-29-2016

https://www.freecodecamp.org/news/command-line-commands-cli-tutorial/

https://tesseract-ocr.github.io/tessdoc/Data-Files-in-different-versions.html