

## **Team Members:**

1. **Ahmed Alaa**
2. **Beshoy Morad**
3. **Zeyad Tarek**
4. **Waleed Mohamed**

## **Project Idea:**

**Grade Auto Filler**

## **Project Needs:**

1. **Python 3.10.7**
2. **OpenCV**
3. **Vscode**
4. **Numpy**
5. **Matplotlib**
6. **PyTesseract**
7. **Tesseract-ocr**
8. **Skimage**

## **Methods:**

### **[Open CV]**

1. **contourArea**
2. **findContours**
3. **GaussianBlur**
4. **threshold**
5. **getStructuringElement**
6. **morphologyEx**
7. **getPerspectiveTransform**
8. **warpPerspective**
9. **cvtColor**
10. **adaptiveThreshold**
11. **drawContours**

12. **erode**
13. **dilate**
14. **Canny**
15. **HoughLines**
16. **rectangle**
17. **resize**
18. **getRotationMatrix2D**

### [PyTesseract]

1. **image\_to\_string**
2. **image\_to\_boxes**
3. **image\_to\_data**
4. **image\_to\_osd**

### Scientific paper(s) as references

1. <https://stackoverflow.com/questions/72465878/opencv-omr-sheet-detect-marked-answers-in-python-getting-proper-binarization>
2. <https://stackoverflow.com/questions/8667818/opencv-c-obj-c-detecting-a-sheet-of-paper-square-detection>
3. <https://pyimagesearch.com/2014/08/25/4-point-opencv-getperspective-transform-example/>
4. <https://maker.pro/raspberry-pi/tutorial/grid-detection-with-opencv-on-raspberry-pi>
5. [https://docs.opencv.org/3.4/d9/db0/tutorial\\_hough\\_lines.html](https://docs.opencv.org/3.4/d9/db0/tutorial_hough_lines.html)
6. <https://learnopencv.com/cropping-an-image-using-opencv/#cropping-using-opencv>
7. <https://pypi.org/project/pytesseract/>
8. <https://builtin.com/data-science/python-ocr>
9. <https://www.kaggle.com/code/tareksherif/arabic-ocr-using-pytesseract>