OCR New Approach

- I started researching on OCR Scan based on the prototype designed by my team.
- Dr. Lam Quang Vu suggested me to begin with Multiple Choice Checking approach for this problem.
- The Multiple Choice Checking worked perfectly individually. However, when trying to integrate it with the system, a new problem came up: It can only detect rectangle border and record marks exactly inside when there is no QR code or distracting images nearby.
  https://www.pyimagesearch.com/2016/10/03/bubble-sheet-multiple-choice-scanner-and-test-grader-using-omr-python-and-opencv/
- So, I came up with some ideas and did research based on those.
- First, I tried detecting only QR code inside an image, ignoring others. And ZBar, a QR detection library on OpenCV was a very effective one.
  https://www.learnopencv.com/barcode-and-qr-code-scanner-using-zbar-and-opencv/
- However, when putting QR code into real example image, I still struggled to distinguish only rectangle area for marking without asserting the QR code as distracting images nearby.
- Then, I tried another approach on how to distinguish different shapes inside an image. My idea was to separate the rectangle border area with other shapes area for easier interactions. For example: I will put the QR code inside a Triangle border. Since I want to focus on Rectangle area, which contains marking information, the detection will now highlight the Rectangle area and blur out others, which is the Triangle area.
- So far so good, the shape detection in OpenCV does exactly what I need. It can now differentiate among other shapes. The Triangle area is ignored and blurred out now, we can focus our work on the Rectangle area with the Multiple Choice Checking approach stated above.
  https://www.pyimagesearch.com/2016/02/08/opencv-shape-detection/
- Surprisingly, the real challenge now begins. Although the Triangle area which contains the QR code is now detected and separated from other areas. We need to determine the QR code lies inside that Triangle and start processing on it before applying any information extract on the Rectangle area.
- Unfortunately, at the end of this course, this approach is still in Research phase.
- I believe these incomplete researches are good stepping stones to help others reduce their time and prototyping solution for future development on this feature.