



## Project

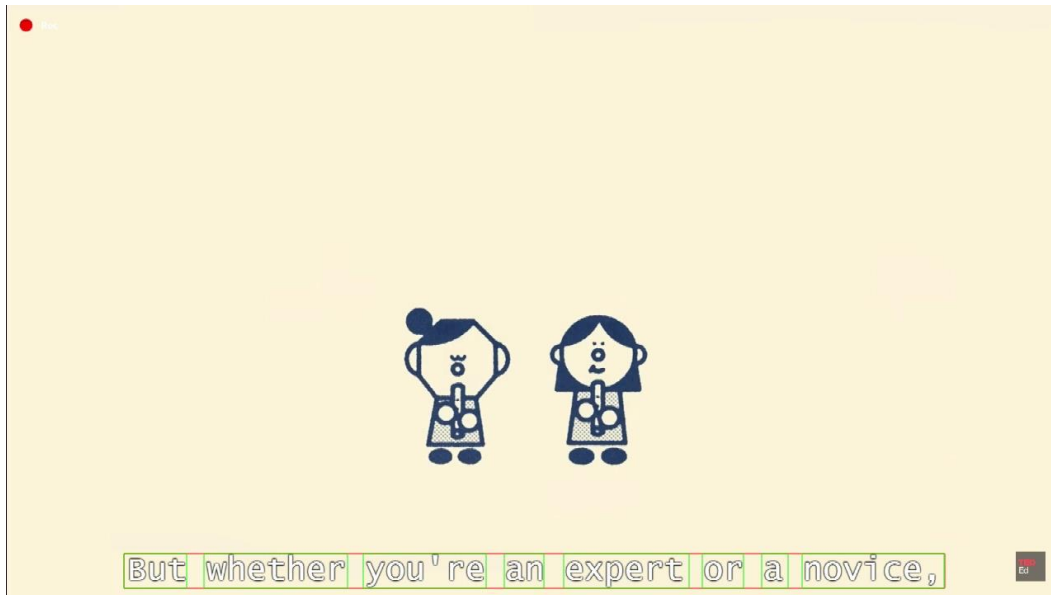
### Delivery Notes:

- This is a group assignment of 4 members (at most)
- All students should work and fully understand everything in the code.
- Due date is on May 18<sup>th</sup> until 11:55 pm
- No late submission is allowed.
- Submission will be on google form through this [link](#)
- No submission through e-mails.
- The submitted files should be named FirstStudentID\_SecondStudentID\_ThirdStudentID\_FourthStudentID.ipynb
- **Do not send your code** to anyone, so that no other student would take your files and submit it under their names.
- **In case of Cheating, you will get a zero grade whether you give the code to someone or take the code from someone or from the Internet**

### Project Details:

You are required to build a **Video Subtitles Detector Program**, where you will take a video with subtitles as an input and detect the area that contains the subtitles by drawing a bounding box on it. You are also required to detect the location of each word. You will use your technique on the [attached video](#).

Expected output is illustrated below. Red bounding box represents the bounding box of the subtitles (You need to create bounding box for each line if the subtitles is spanned across 2 lines) and the green bounding box represents the bounding box of each word. These bounding boxes should be applied **to all the subtitles in the video**.



## Instructions

- 1- You are required to submit :-
  - a. a Python Jupyter Notebook or MATLAB file containing your code **with the outputs of each step showed.**
  - b. A Presentation that specifies your methodology in the following steps
    - i. How you read and processed your video
    - ii. Preprocessing & noise removal (with before and after example images)
    - iii. Segmentation (with before and after example images)
    - iv. How you calculated the bounding boxes dimensions (Subtitle, word, character bounding boxes)
    - v. Screenshots of your results
- 2- You can only use the image processing techniques studied in this course or mentioned in any paper you found. Using machine learning or deep learning models is not allowed.