

Welcome to the psycho-physical experiment on Content-Color-Dependent Screening (CCDS) halftone image quality assessment. The estimated total duration of this experiment is about 45 minutes. Please read the content below carefully before you start.

Introduction

This experiment contains one section. The total number of images you will need to evaluate is 30. For each images, two zoom-in areas will be evaluated. In this case, total 60 pairs of zoom-in areas will be evaluated.

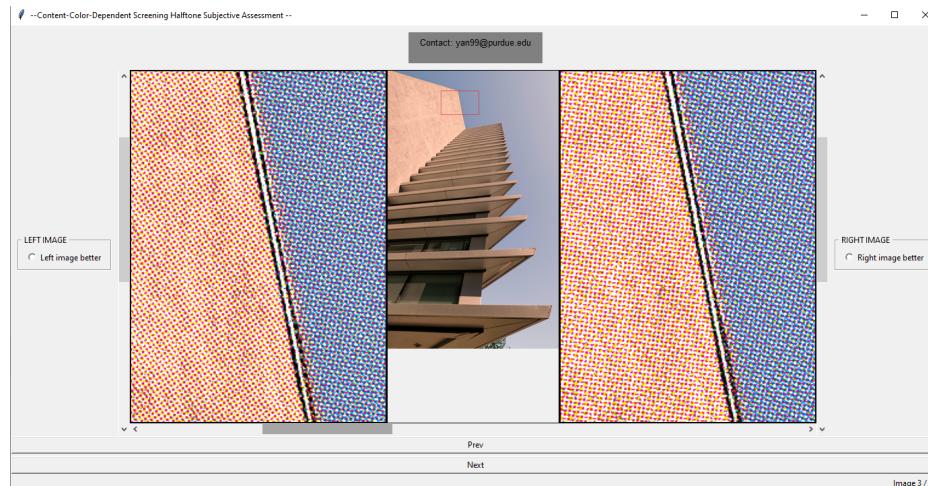


Figure 1: A screenshot for the graphical user interface.

For the same zoom-in area, the halftoned images generated with two different methods will be shown simultaneously on the screen side by side as shown in the figure 1. The image shown in the center is the original continuous-tone image with a red box cropped the zoom-in area. You will need to decide whether you prefer the left image or the right image based on five image quality attributes (color, lightness, contrast, sharpness, and artifacts).

Precaution

- The code is written in Python 3.
- It may take up to 10 minutes to load the graphical user interface window.

- In the experiment, there may be some delays with the GUI pages. Please do not click on the GUI window until all widgets show up.
- Sit at a comfortable viewing distance (about 24in/60cm away from the screen). You could make small adjustments to the viewing distance if you feel it is necessary.
- **Do not skip any of the images or quit the GUI window in the middle of the experiment.** If you do so, your ratings will not be saved.
- After you finish rating all images, click on "Done" to save and exit the GUI and then you can proceed to the next part. Two **.txt** files will be generated.

Experiment

Setup

- Download the experiment from https://github.com/yan99/CCDS_Experiment.git
- Open CCDS_Experiment folder in a terminal window.
- Install the required Python packages by typing "**pip install -r requirements.txt**" in a terminal window.

Procedure

- Run "**python3 main.py**". The graphic user interface will be prompted.
This may take up to 10 minutes. Please wait patiently.
- You can use the scroll bar to check the zoom-in image and view the zoom-in image from any distance. Choose left or right image which you prefer by clicking on the radio selection. If you find it is hard for you to decide, just click either one.
- Click on the "Next" button at the bottom to go to next page. You can go back to previous page by clicking "Prev" button. Please note that if you revisit the previous pages, the ratings of all these pages will be cleared and overwritten.
- When your assessment is completed, a message "Please click on 'Done' to save and exit" will appear. After clicked on "Done" button, the results will

be saved into two **.txt** files.

- Please note: if you accidentally skipped some images, it will prompts the image number that you missed after you click on "Done" as a warning pop-up window. However, since you will still need to click "Previous" button to go back to the specific image, I recommend you to make sure you do not skip any image.
- Please email the two **.txt** files to yan99@purdue.edu.

Training

In this session, some key tips will be discussed to illustrate where the main differences located.

The most observable feature is if the halftone image shows a strong either circular or moirè pattern as shown in figure 2.

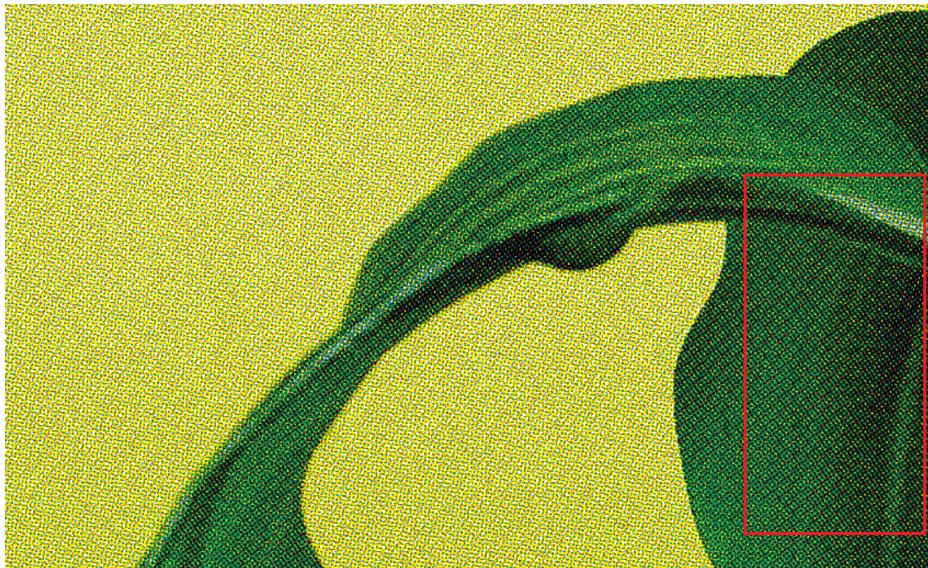


Figure 2: Example 1.

Another noticeable feature locates at the noise. Some of the images look noisy and not smooth over a smooth area.

Some of the halftone image has some color shifts contrast with the original image. This rarely happens but still can be a criteria for evaluating the images contained in this experiment.