Charge to the Observer

August 2020

Welcome to the psycho-physical experiment on scanned document image quality assessment. The total duration of the experiment is about 50 to 60 minutes. You can do the experiment in multiple sessions that best fit your own schedule, but please try to finish it within one week once you started.

1. Introduction

You will need to evaluate 20 scanned document images. Within each image, there will be about 10 to 20 regions indicated by bounding boxes. For each region, you will need to assign a region type, and a quality grade for every resolution, based on its visual quality and ease to read. The rating scales are

Grade	Category	Characteristic
A	Best	**Visually pleasant** fine details and minimal noise texts and lines are in great clarity
B	Good	**Visually OK** acceptable details just enough to read the texts comfortably
C	Fair	**Annoying** somewhat noisy or blurry takes guesses and contexts to understand the texts lines start to blur out and break up
D	Poor	**Unacceptable** very noisy or blurry texts and lines are unrecognizable

Two examples of Grade A and C images are shown in Figure 2.

2. Precautions

- The code is written in Python 3.
- Sit at a comfortable viewing distance from your monitor to do the experiment.
- Make sure you click the save button and see the "Success" message above the button after you finish grading an image. Unsaved changes will be lost if you go to a different image or close the GUI.
- If you feel tired, save your current progress, close the GUI, and take a break. You can continue to grade the remaining images when you feel better.

3. Experiment

3.1 Setup

- Download the experiment codes from GitHub.
- Download your assigned set of image dataset. Put the folders "imageFiles" and "GroundTruthRecordAnnotation" in "ImageQualityLabelingTool".
- Open the "ImageQualityLabelingTool" folder in the terminal.
- Type "pip3 install -r requirements.txt" in the terminal to install required packages.
- Type "python3 annotateApp.py" in the terminal to open the GUI.

3.2 Procedures

- Run annotateApp.py and open the GUI.
- Check the region(s) that you want to grade with check boxes in the first column of the table. The corresponding region(s) will be highlighted with red bounding boxes. To view the polygons for these bounding boxes, check "Show Polygons".
- Adjust the resolution of the selected region(s) by checking the corresponding boxes in the first row of the table. Image in the selected region(s) will be rendered according to the selected resolution.
- To zoom in to an area of the image, press left mouse button and drag to select an area. You can use the horizontal and vertical scroll bars to scroll to an appropriate area. To go back to the whole image view, double click left mouse button.
- Select a type for the the selected region(s). Rasters are usually graphics, symbols are text regions, and vectors are background or pure-color regions.
- Evaluate the selected region(s) for all available resolutions, and assign grades. Note that grades of all selected region(s) will be changed simultaneously. Note that grades for lower resolutions will always be lower than or equal to that of the higher resolution. For example, when you grade a region as "D" at 150 DPI, all grades higher than "D" for the lower resolutions (i.e. 100 DPI and 75 DPI) will be changed to "D" automatically.
- Repeat previous steps until you finish grading all regions at all resolutions.
- Click "Save" button and make sure that a "Success" message appears above the button, before going to the next or the previous image. You can also choose an image by name from the selection tab above the table.
- You can exit the GUI anytime as long as you save all changes you have made.
- After grading all the images, zip the "Outputs" folder in the root directory of the experiment and email the zipped file to **hu430purdue.edu**.

GUI User Guide

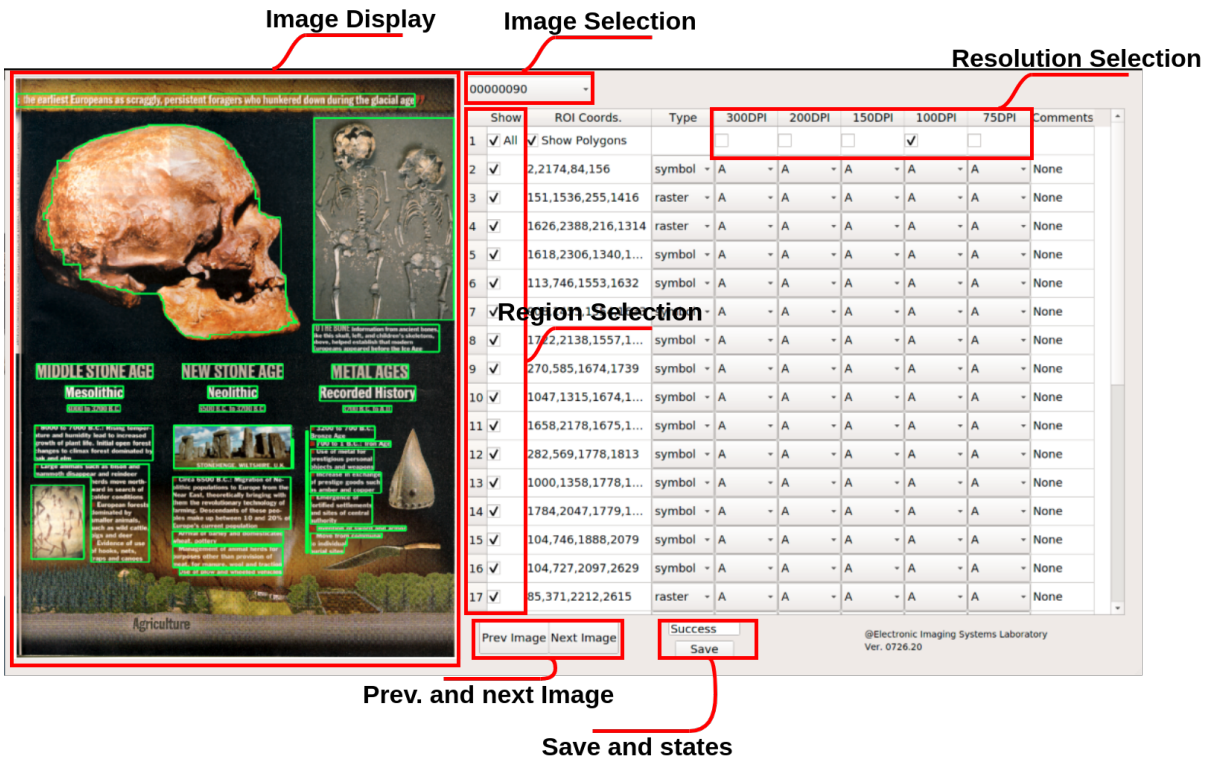

Figure 1: Graphical User Interface

Examples of Grade A and Grade C Image

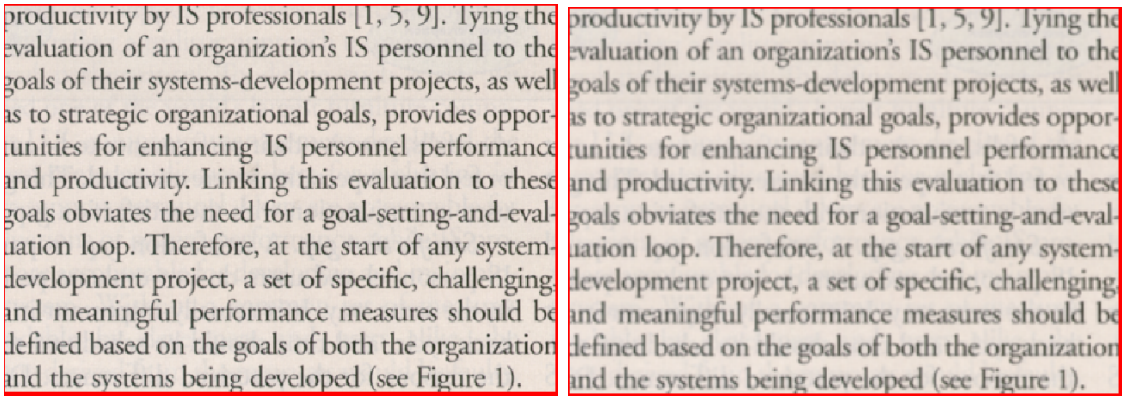

Figure 2: Left: Grade A Example; Right: Grade C Example.