Image Manipulation – Python

Final Design Document

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**Goal:** To create a simple image manipulation program to blur, merge, adjusting contrast, resizing an image, etc.

**Result:** I have created a Python code using the Pillow image manipulation library. A user can manipulate an image with optional manipulations and optional filters.

**Function**: manipulate\_image(image\_path, output\_path, resize, crop\_box, rotate\_angle, flip\_method, convert\_mode):

1. Open the image from given image path (image\_path).
2. Display the image
3. If resize is provided:

* Resize image to specified sizes
* Display new image

1. If crop\_box is provided:
   * Crop the image
   * Display new image
2. If rotate\_angle is provided:
   * Rotate the image by specified angle
   * Display new image
3. If flip\_method is provided:
   * Flip the image using the specified method
   * Display new image
4. If convert\_mode is provided:
   * Convert image to the specified mode
   * Display new image
5. Save the final manipulated image to specified output\_path
6. Print a message confirming the image has been saved

**Function:** apply\_filters(image\_path, output\_path, blur, contour, detail, edge\_enhance, edge\_enhance\_more, emboss, find\_edges, sharpen, smooth, smooth\_more):

1. Open the image from given image\_path
2. Apply filter if any are specified

* If blur is specified, apply filter
* If contour is specified, apply filter
* If detail is specified, apply filter
* If edge\_enhance is specified, apply filter
* If edge\_enhance\_more is specified, apply filter
* If emboss is specified, apply filter
* If find\_edges is specified, apply filter
* If sharpen is specified, apply filter
* If smooth is specified, apply filter
* If smooth\_more is specified, apply filter

1. Display the image
2. Save final image to specified output\_path.
3. Print message

**Key Terms:**

* Resize: Modify dimensions of the image
* Crop: Select a specific region from the image
* Rotate: Rotate the image by a specific angle
* Flip: Flip the image horizontally or vertically
* Convert: Change the image to a different color mode
* Filter: Apply special effects like blur, sharpen, etc.