

Engineering Intern Assignment

Assignment: Image Processing and Task Automation

Project Overview: You have been assigned to develop an image processing application that allows users to upload images and perform various tasks on them. The application should provide a user-friendly interface for uploading images, applying filters or transformations, and automating tasks using image processing techniques.

Requirements:

1. Image Upload:

- Users should be able to upload images from their local machine to the application.
- Implement validation to ensure the uploaded files are images of supported formats (e.g., JPEG, PNG).

2. Image Filtering and Transformation:

- Provide a set of predefined image filters and transformations that users can apply to the uploaded images.
- Filters include grayscale conversion, brightness adjustment, blur, and edge detection.
- Transformations include resizing, rotation, and cropping.

3. Task Automation:

- Allow users to define a sequence of tasks to be performed on the uploaded image automatically.
- Users should be able to select and arrange multiple filters or transformations to create a task sequence.
- Implement a feature to preview the result of the task sequence before applying it to the image.

4. User Interface:

- Design and implement a user interface that allows users to upload images and interact with the application.
- Display the uploaded image and provide options to apply filters, transformations, and task automation.
- Ensure the interface is intuitive, responsive, and visually appealing.

5. Error Handling and Validation:

- Implement error handling mechanisms to gracefully handle any errors that may occur during image processing.
- Validate user input to prevent incorrect or unsupported operations on the images.

Technical Guidelines:

- Use a web development framework of your choice (e.g., Django, Ruby on Rails, Laravel, [ASP.NET](#), Express.js, etc.) for the backend.
- Utilize a suitable image processing library or framework (e.g., OpenCV, Pillow) to perform the image operations.

- Use HTML, CSS, and JavaScript (or any frontend framework of your choice) for the user interface.
- Write clear and well-documented code.
- Use version control (e.g., Git) for managing your project's source code.
- Host your project on a hosting platform (e.g., Heroku, AWS, Azure, etc.) for demonstration purposes.

Deliverables:

1. Source code of the image processing application (backend and frontend).
2. Detailed documentation explaining the system's architecture, setup instructions, and usage guidelines.
3. A brief report summarizing your development process, challenges faced, and lessons learned.
4. Any relevant unit tests you have implemented.

Submission:

Submit your assignment via email or your organization's preferred submission method. Include all the deliverables mentioned above.

Note: Feel free to modify or extend the assignment based on your specific requirements and technology stack.