Objectives

1. Transfer all parameters from individual files to a global parameters header file for improved management and consistency.
2. Resolve default input issues in the pop-up input boxes for clearer user input.
3. Improve the line detection function to accurately track and remove dark lines, including thick line segments.

Activities

1. **Global Parameters Transfer:**
    - Attempted to move parameters from each file into a central global parameters header file.
    - Tested the transferred parameters across multiple modules but reverted due to significant execution errors.
2. **Pop-Up Input Box Customization:**
    - Removed default values in the pop-up input boxes to simplify user input.
    - Experimented with alternative methods to set parameters directly in function calls, but reverted to the original code due to unexpected behavior.
3. **Line Detection Algorithm Improvement:**
    - Updated the dark line detection algorithm to handle thicker lines and better detect line weights.
    - Tried different validation functions (isLineDark, isLineValid) and restructured the detection as two modules (single-line and thick-line detection).
    - Reimplemented line detection steps to traverse each column and identify columns containing over 90% dark pixels as thick lines.
    - Updated the updateImageDisplay() and control panel to show detected lines in color for visual feedback.

Achievements

1. Completed setup of a reconfigurable line detection function with steps to detect columns as thick lines based on dark pixel percentage.
2. Control panel updated with new buttons for line detection and removal, supporting easier access and user interaction.
3. Confirmed basic functionality of parameter transfer, though full integration was not achieved.

Problems and Solutions

Problem 1: Transferring parameters to a global header file disrupted function execution across multiple modules.

Solution 1: Reverted to the original code structure to restore functionality and identified a need for a more gradual migration strategy to global parameters, potentially moving parameters module by module to isolate issues.

Problem 2: Removing default values in pop-up input boxes resulted in unexpected behavior, affecting parameter-setting reliability during function calls.

Solution 2: Reverted to the previous input configuration for stability, and will consider redesigning the input flow with structured validation to ensure parameter consistency.

Problem 3: Despite updates to the line detection algorithm, including enhanced functions and line validation, the algorithm failed to detect or remove any lines.

Solution 3: Broke down the algorithm further by focusing on column-by-column dark pixel analysis, marking columns with over 90% dark pixels as thick lines. Will continue troubleshooting detection gaps and enhance removal accuracy in the upcoming iterations.