1. **Objectives**:
    - Ensure the functionality of OpenCV with GPU, utilizing CuDNN and CUDA.
    - Transform the CLAHE algorithm from CPU to GPU processing.
    - Implement a threshold-based CLAHE feature, applying the function to regions below a user-defined intensity threshold.
2. **Activities**:
    - **OpenCV with GPU**:
        - Checked and confirmed the functionality of OpenCV with GPU (CuDNN & CUDA).
        - Transformed CLAHE from CPU to GPU processing.
        - Included OpenCV and CUDA headers in image_processor.cpp to enable CLAHE to run on the GPU.
        - Initially added processing time for both CPU and GPU to debug output but removed the CPU-related time for simplicity.
        - Moved the GPU processing time display to the Pixel's Info zone (below Last Action bar), visible only when CLAHE is applied.
    - **CLAHE with Threshold**:
        - Added a new CLAHE with threshold feature allowing users to apply CLAHE to regions with pixel values below a defined threshold.
        - **Status 1**: Initially ran on CPU mode without visible effect, similar to overall CLAHE.
        - **Status 2**: Integrated the function into GPU mode.
        - **Status 3**: Created a mask to detect regions below the threshold, but faced issues:
            - Issue 1: Processing was in 8-bit instead of 16-bit, affecting accuracy.
                - **Solved**: Changed the process to 16-bit.
            - Issue 2: Regions below the threshold were replaced by white (65535).
                - **Solved**: Corrected the algorithm to call CLAHE properly.
            - Issue 3: Detected regions under the threshold didn't show a visible difference from the original image after applying CLAHE.
                - **Pending**: Investigation ongoing to determine the cause of the unchanged output.

3. **Achievements**:
    - Successfully transformed CLAHE from CPU to GPU mode.
    - Properly implemented GPU processing time display within the UI.
    - Developed the CLAHE with threshold feature and resolved issues regarding 16-bit processing and region detection.
4. **Problems & Solutions**:
    - **Problem**: CLAHE with threshold initially showed no effect and was applied in CPU mode.
        - **Solution**: Integrated the function into GPU mode and corrected 16-bit processing.
    - **Problem**: Detected regions below the threshold were replaced with white instead of applying CLAHE.
        - **Solution**: Adjusted the algorithm to apply CLAHE correctly.
    - **Problem**: No visible difference in the output after applying CLAHE with threshold.
        - **Pending**: Further investigation into the algorithm to understand why the effect is not appearing in the output.