Task Progress Update Report

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1. Overview of Assigned Tasks

Task 1: Adjust calibration for the X and Y axes

- **Objective**: Adjust the calibration of the X and Y axes by referring to Phang's code without directly copying it.
- **Assigned On**: 07-10-2024

Task 2: Implement CLAHE (Contrast Limited Adaptive Histogram Equalization)

- **Objective**: Apply CLAHE to the output for image enhancement.
- **Assigned On**: 07-10-2024

2. Progress as of 17-10-2024

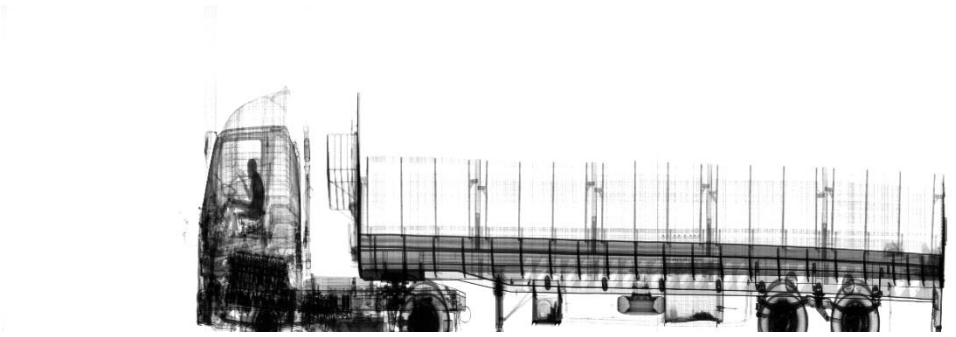
Task 1: Calibration for the X and Y Axes

- **Current Status**: Completed
- **Details**:
    - The calibration adjustments for the X and Y axes have been **successfully** updated **after reviewing** Phang's code without directly copying it.
    - Presented the effect of calibration, demonstrating how it impacts the output.

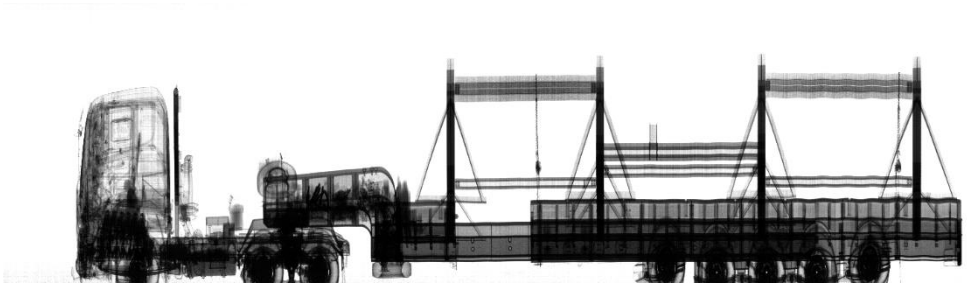
Task 2: CLAHE Implementation

- **Current Status**: In Progress
- **Details**:
    - **Successfully** implemented **CLAHE** using the OpenCV library.
    - Presented the output with CLAHE applied, demonstrating how the **`clipLimit` parameter** can be **adjusted** through the **input field** to modify the effect.
    - Received four sets of raw data. Calibration was successful and **clear** for **two** sets. However, **one** data set **still** contains **some noise** in the axes, and **one** more set **failed** to show any results during the progress update.

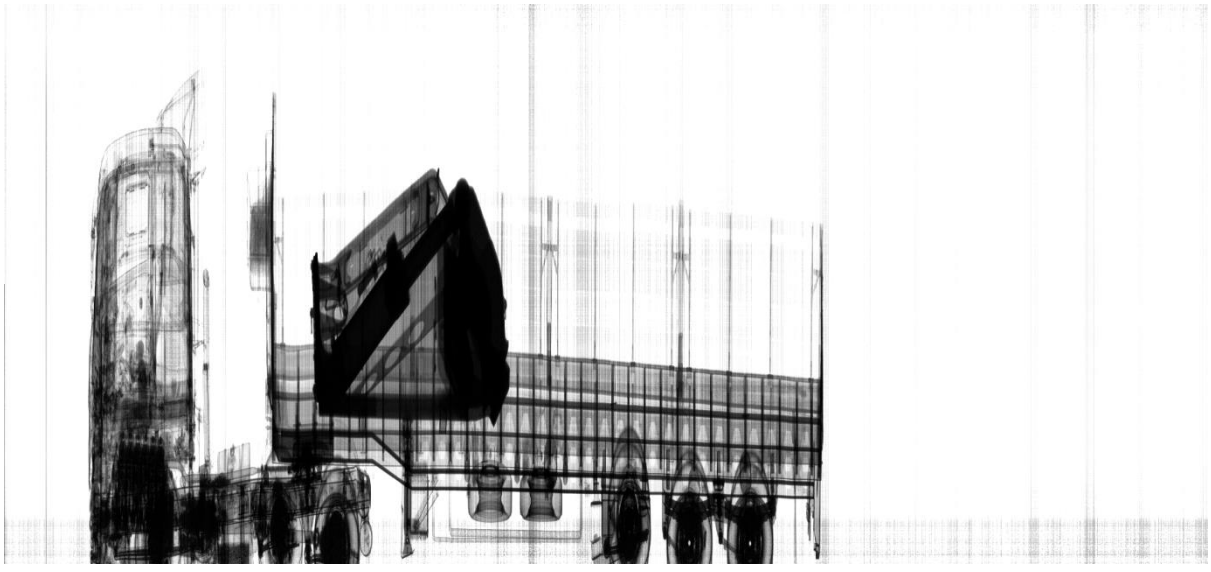
- **Image 1**: Output from raw data set 1, showing clear calibration results.



- **Image 2**: Output from raw data set 2, showing clear calibration results.



- **Image 3**: Output from raw data set 3, showing some noise in the axes.



3. Next Steps and New Tasks (Received on 17-10-2024)

Task 1: CLAHE with GPU Implementation

- **Objective**: Integrate CLAHE functionality using GPU acceleration, not limited to the OpenCV method.
- **Action Plan**: Explore and implement CLAHE with GPU methods, potentially using CUDA or other relevant libraries.

Task 2: Calibration Method using Gan Heng Lai's Code

- **Objective**: Refer to Gan Heng Lai's code and method to perform X and Y axis calibration more efficiently.
- **Action Plan**: Investigate Gan Heng Lai's flow and adapt it for current use without directly copying the code.

Task 3: Apply Threshold to CLAHE for Dark Areas

- **Objective**: Implement CLAHE in such a way that it enhances only certain parts of the image that are dark, leaving the rest unchanged.
- **Action Plan**: Integrate a threshold value as an input parameter for CLAHE to focus on dark areas, with an adjustable input field to specify the desired threshold.

Task 4: OOP Refactoring

- **Objective**: Refactor the current code, breaking down the CLAHE implementation and calibration adjustments into multiple classes and files using Object-Oriented Programming (OOP) principles.
- **Action Plan**: Apply OOP concepts to transfer functionalities into distinct classes and ensure better code organisation.

4. Roadblocks/Issues

- One of the raw data sets continues to present noise in the X and Y axis calibration, requiring further investigation.
- One data set failed to display during the update, necessitating troubleshooting.

5. Conclusion

- The calibration and CLAHE tasks have been mostly completed, with successful outputs presented for CLAHE.
- Additional work is required on GPU integration, more complex CLAHE functionality for dark regions, and applying OOP principles to structure the code better.