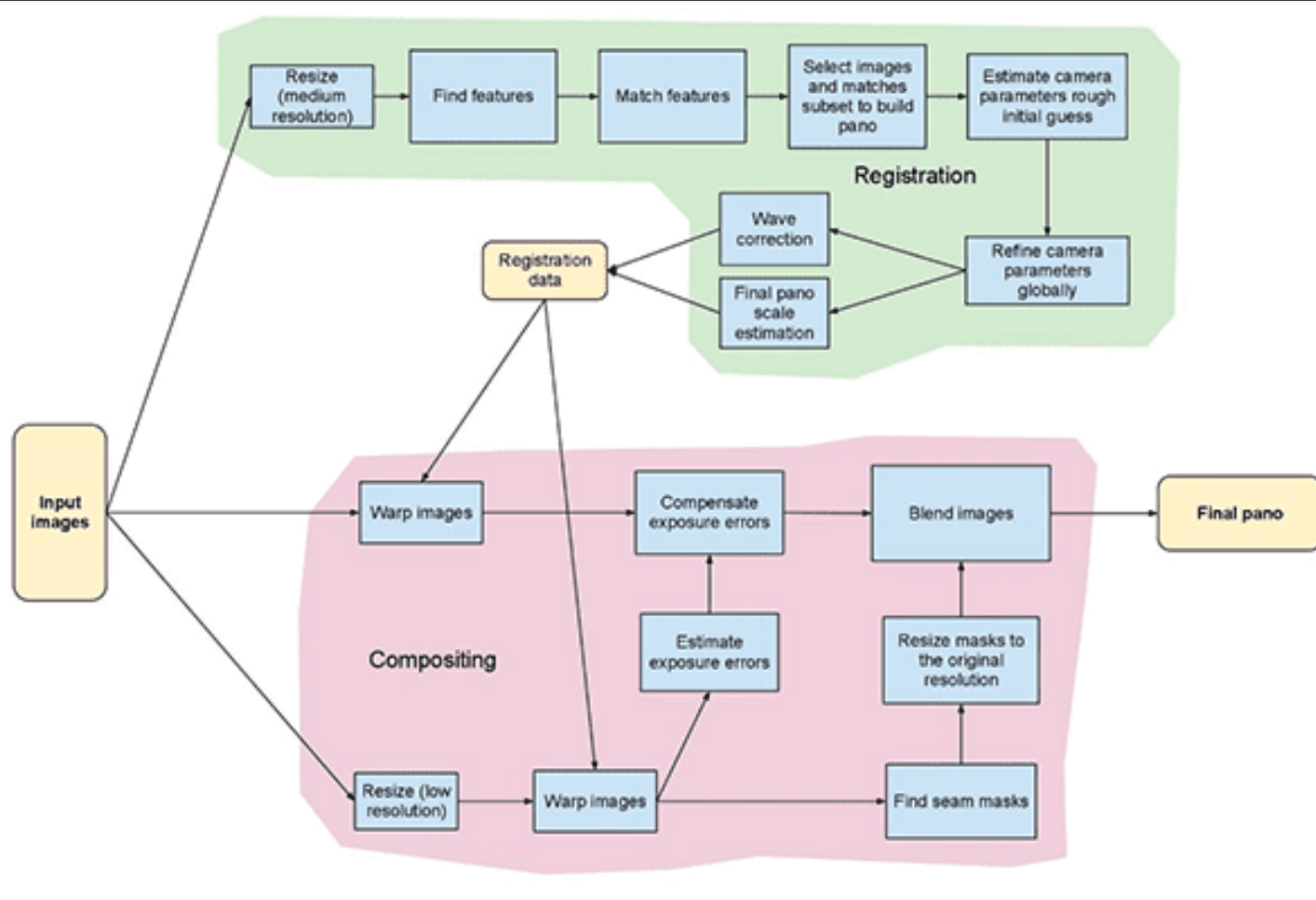


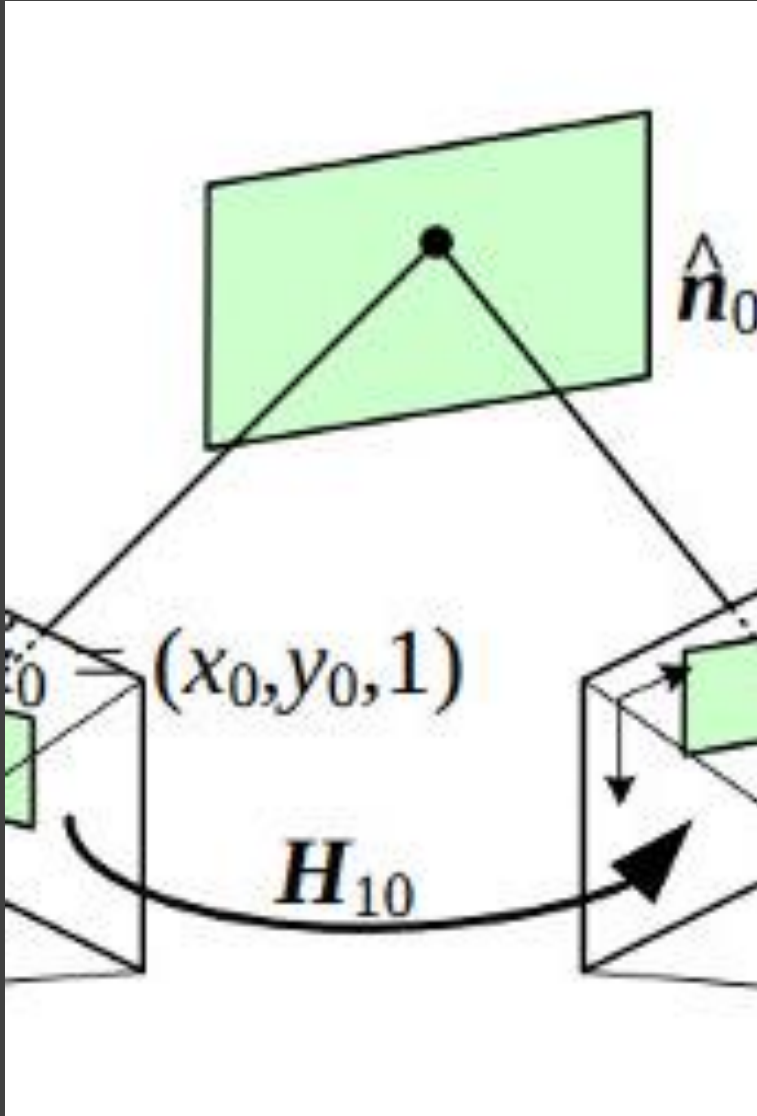
# Image Stitching

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CREATING PANORAMAS USING HOMOGRAPHY COMPUTATION

# Panoramic Stitching Process





# Methodologies

## Homography Computation

### *Feature Matching:*

- Detected key points using SIFT or ORB algorithms.
- Matched features between images to find correspondences.

### *Computing Homography Matrix:*

- Formulated a linear system from matched points.
- Used **Singular Value Decomposition (SVD)** to solve  $Ax=b$
- Applied **RANSAC algorithm** to handle outliers and find the best HHH.

# Methodologies

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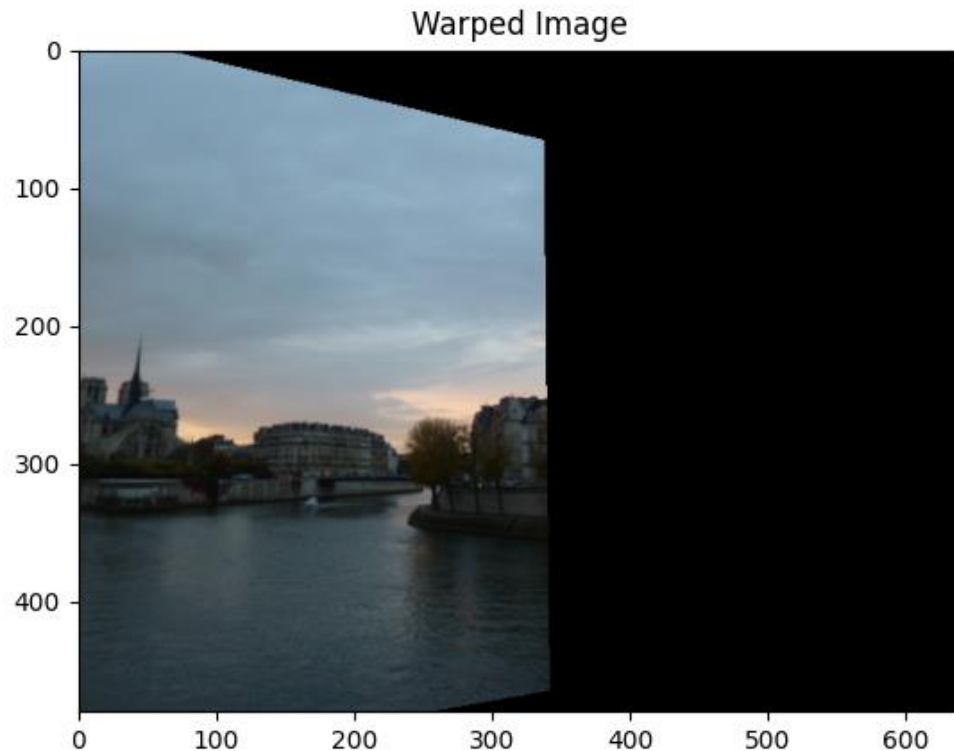
## Image Warping

### *Inverse Mapping:*

- Calculated the inverse homography
- Mapped destination pixels back to source image coordinates.

### *Bilinear Interpolation:*

- Estimated pixel values at non-integer coordinates.
- Ensured smoothness and reduced artifacts in the warped image.



## Results and Conclusion



Gained practical experience with homography and image warping.



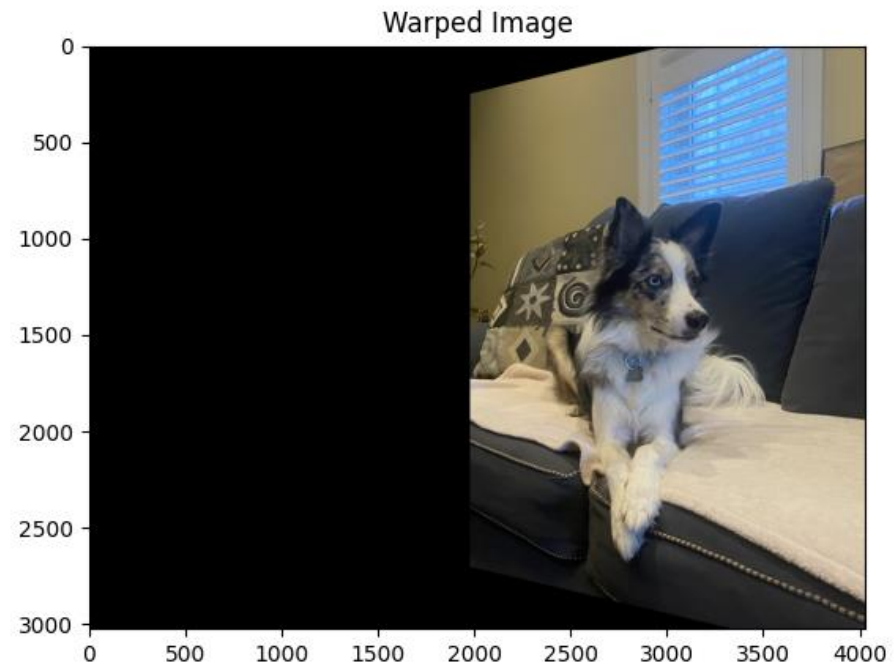
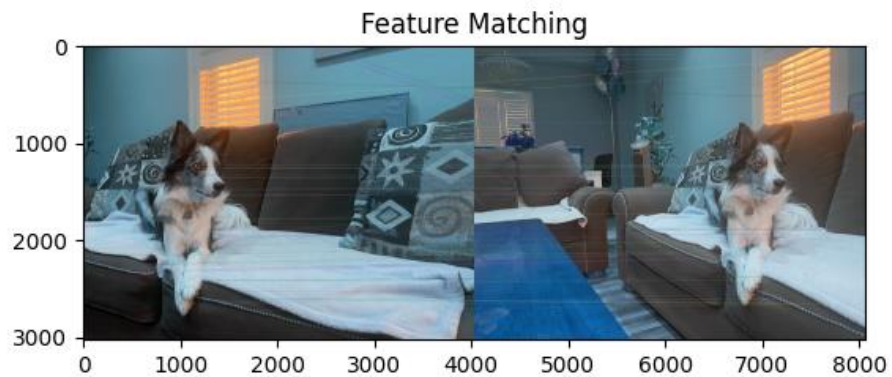
Deepened knowledge of linear algebra applications in image processing.



The following are some results!



Exhibit 1



# Exhibit 1



# Exhibit 1

Notice: small blurs due to minor movements.

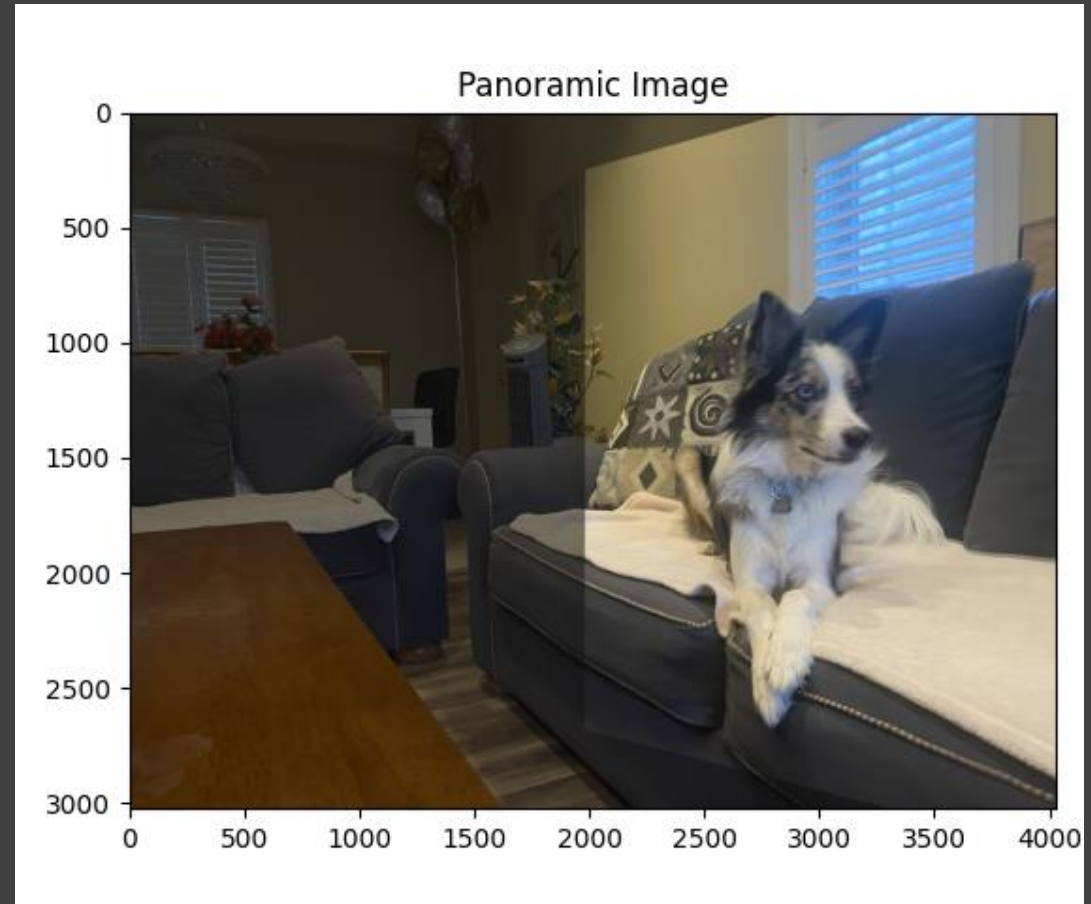
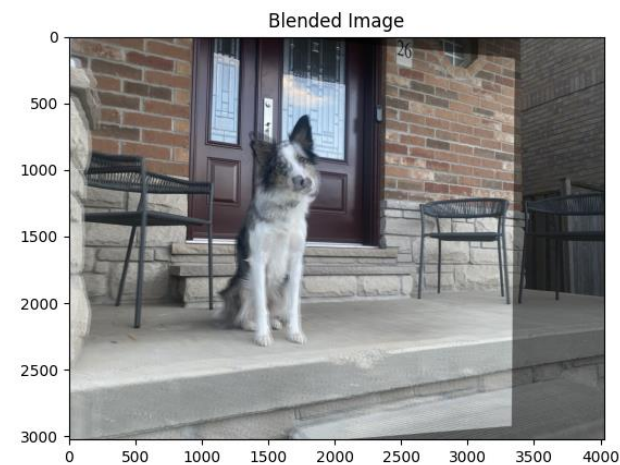
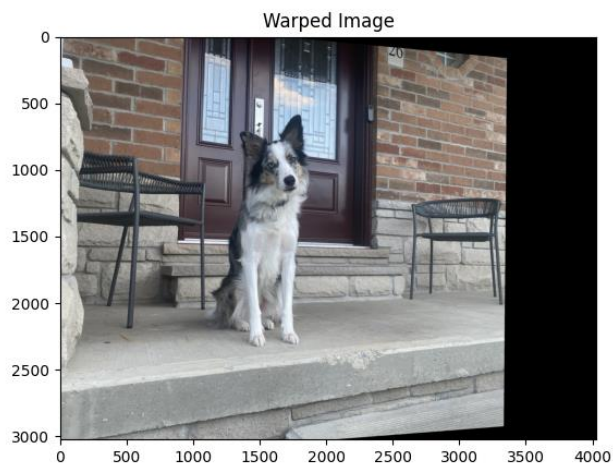
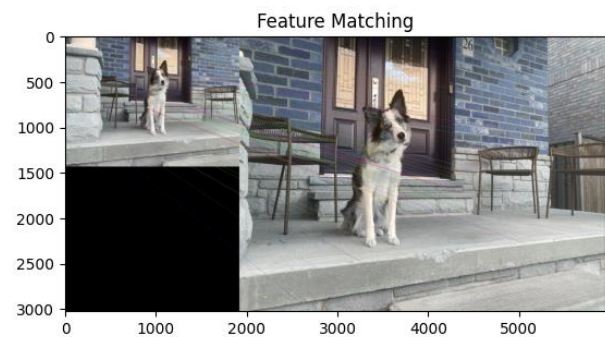






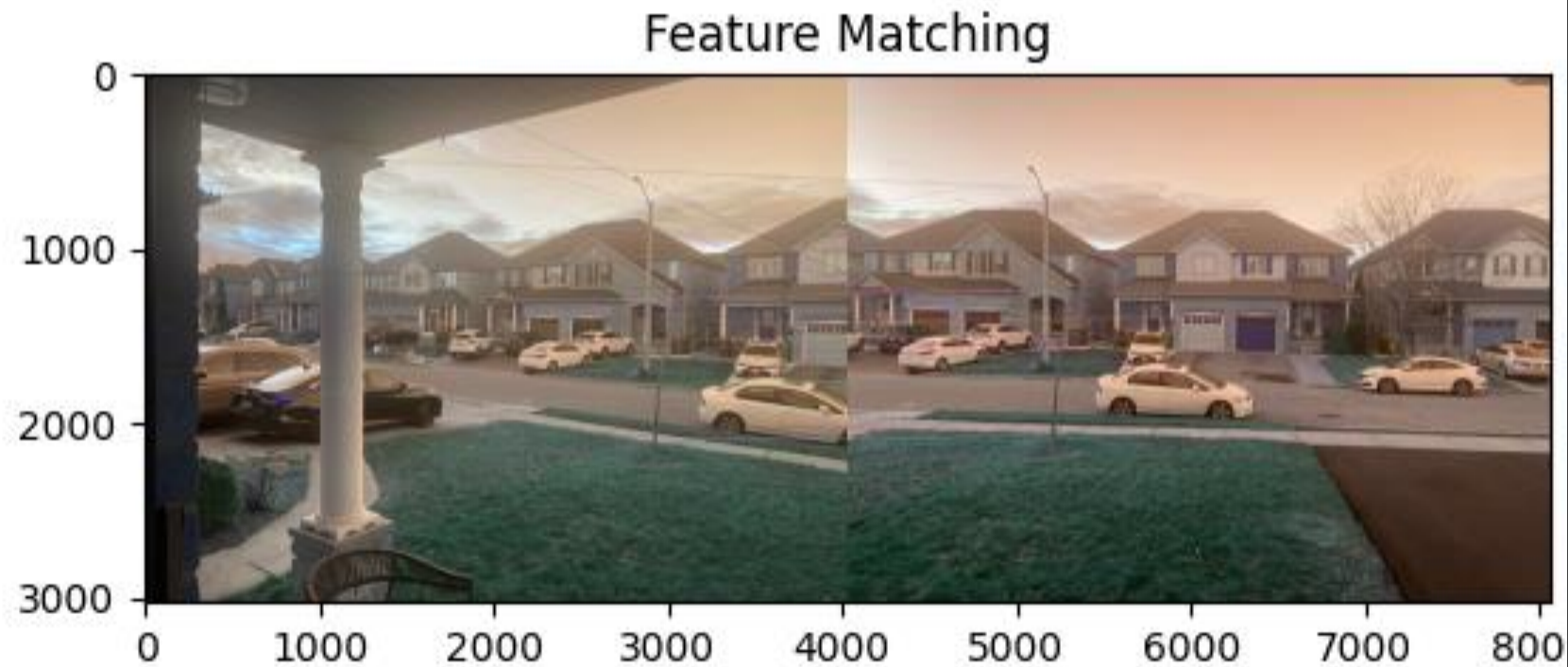
Exhibit 2



# Exhibit 2

# Exhibit 3

Trying 3 Static Images.





# Exhibit 3

Warp needed for first two images.

Warped Image



# Exhibit 3

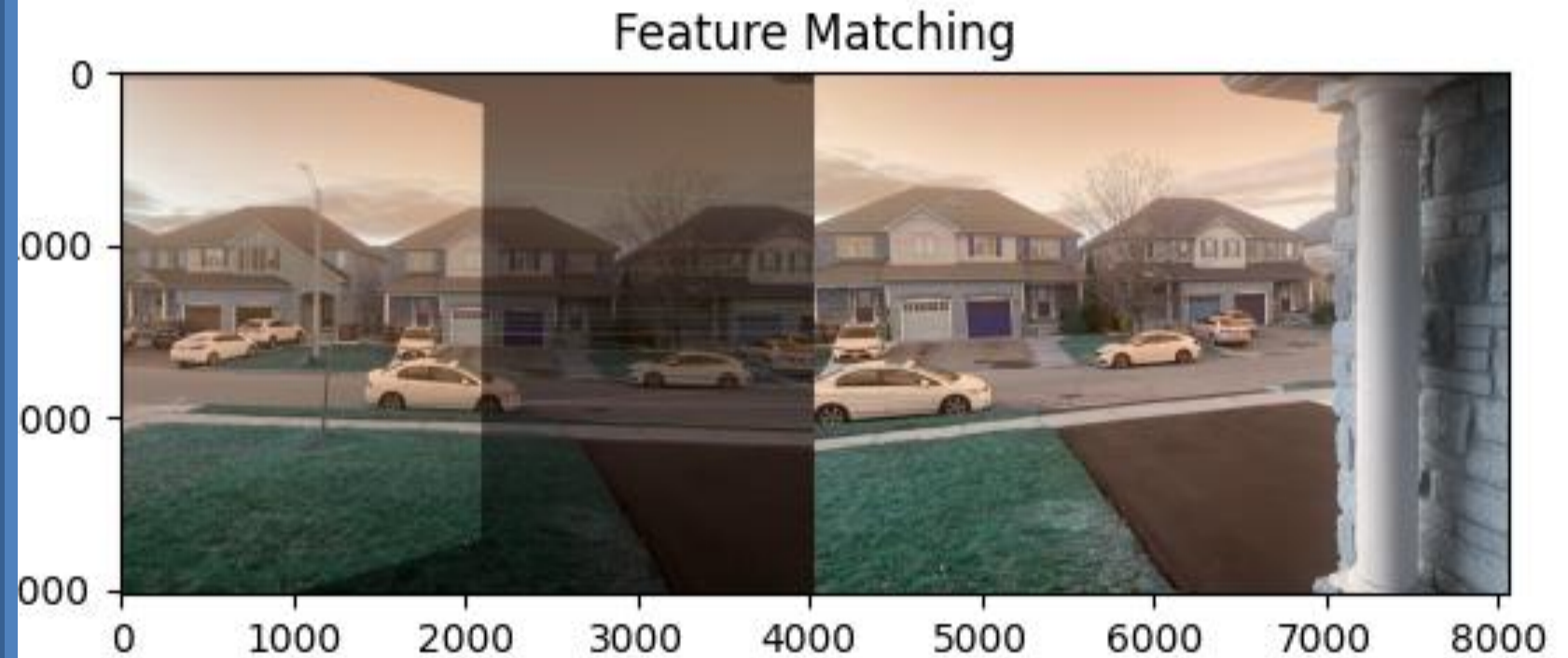
First Panorama

Blended Image



# Exhibit 3

Feature Detection for Blended Image 1  
and Image 2, with Image 3



# Exhibit 3

Image Warping needed.

Warped Image





# Exhibit 3

Final Panoramic

Panoramic Image

