

# CS435 Final Project - Morphology

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Note: All work were split 50/50 between Harry Chong and Willow Livengood.

## 1 Scan-fill a Triangle

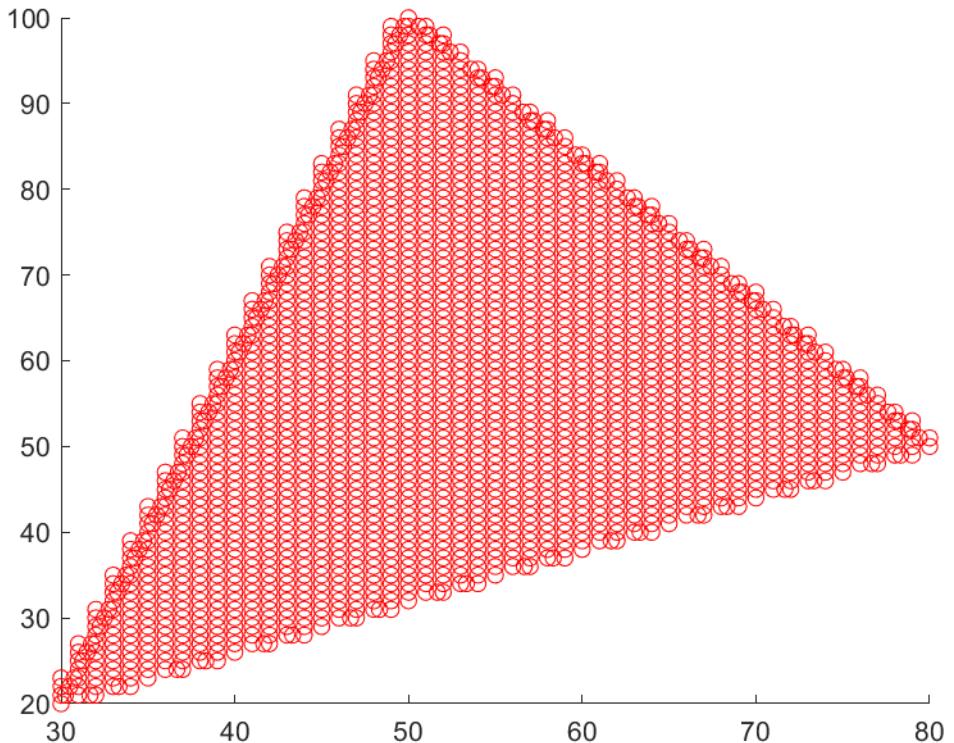


Figure 1: Scan-Filled Triangle

## 2 Finding a Transformation

**Original Vertices:** (20, 30), (100, 50), and (50, 80)

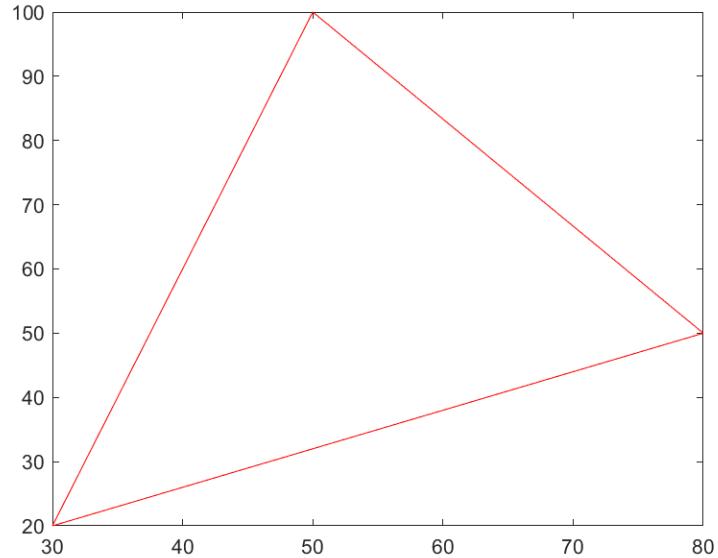


Figure 2: Original Vertices

**Transformation Matrix:**  $\begin{bmatrix} 1.8794 & -0.6840 & 20.0000 \\ 0.6840 & 1.8794 & 40.0000 \\ 0 & 0 & 1.0000 \end{bmatrix}$

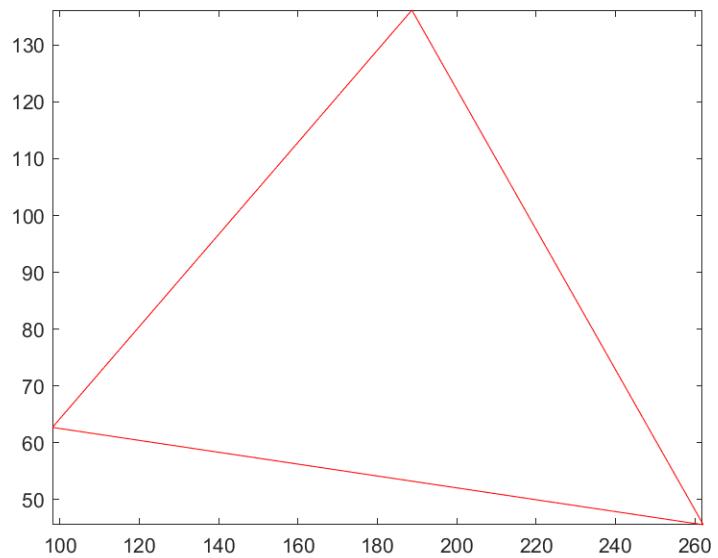


Figure 3: Transformed Vertices

**Learned Matrix:**  $\begin{bmatrix} 0.4698 & 0.1710 & -16.2373 \\ -0.1710 & 0.4698 & -15.3737 \\ 0 & 0 & 1.0000 \end{bmatrix}$

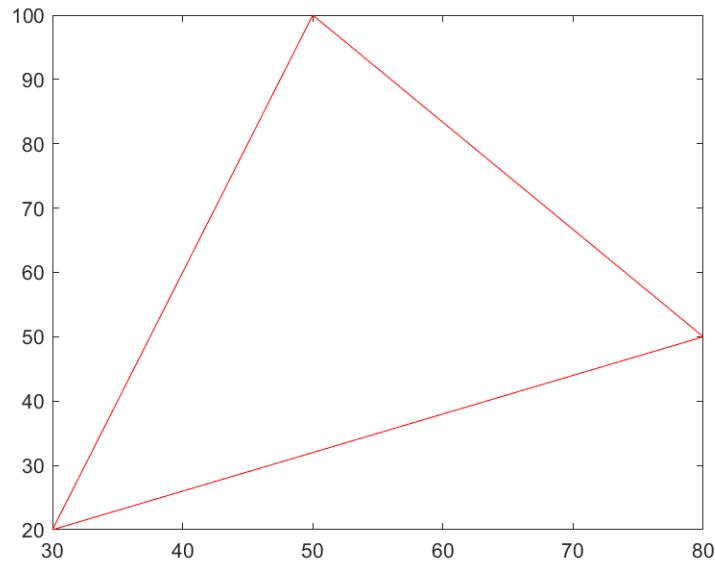


Figure 4: Recovered Vertices

### 3 Cross Dissolve



(a) Image 1 ( $\alpha = 0.3$ )

(b) Image 2 ( $\alpha = 0.7$ )

Figure 5: Cross Dissolve for Image Set 1



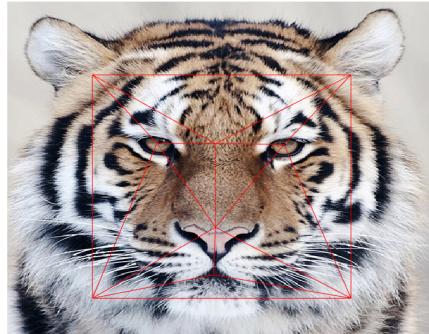
(a) Image 1 ( $\alpha = 0.3$ )

(b) Image 2 ( $\alpha = 0.7$ )

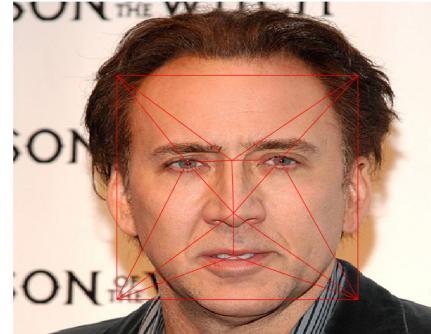
Figure 6: Cross Dissolve for Image Set 2

For the videos, please find them located in the 'results' directory within the '3.cross\_dissolve' folder under 'Set1' and 'Set2'. Thanks!

## 4 Visualize Point and Triangle Correspondences

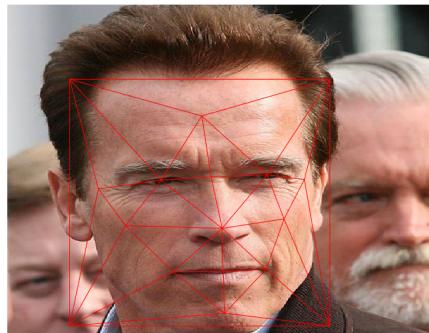


(a) Image 1

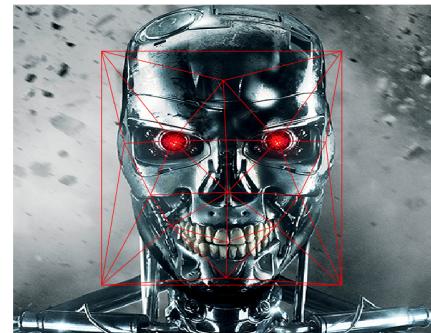


(b) Image 2

Figure 7: Triangulations for Image Set 1



(a) Image 1



(b) Image 2

Figure 8: Triangulations for Image Set 2

## 5 Morphing



(a) Image 1 ( $\alpha = 0.3$ )



(b) Image 2 ( $\alpha = 0.7$ )

Figure 9: Morphing for Image Set 1



(a) Image 1 ( $\alpha = 0.3$ )



(b) Image 2 ( $\alpha = 0.7$ )

Figure 10: Morphing for Image Set 2

For the videos, please find them located in the 'results' directory within the '5.morphing' folder under 'Set1' and 'Set2'. Thanks!