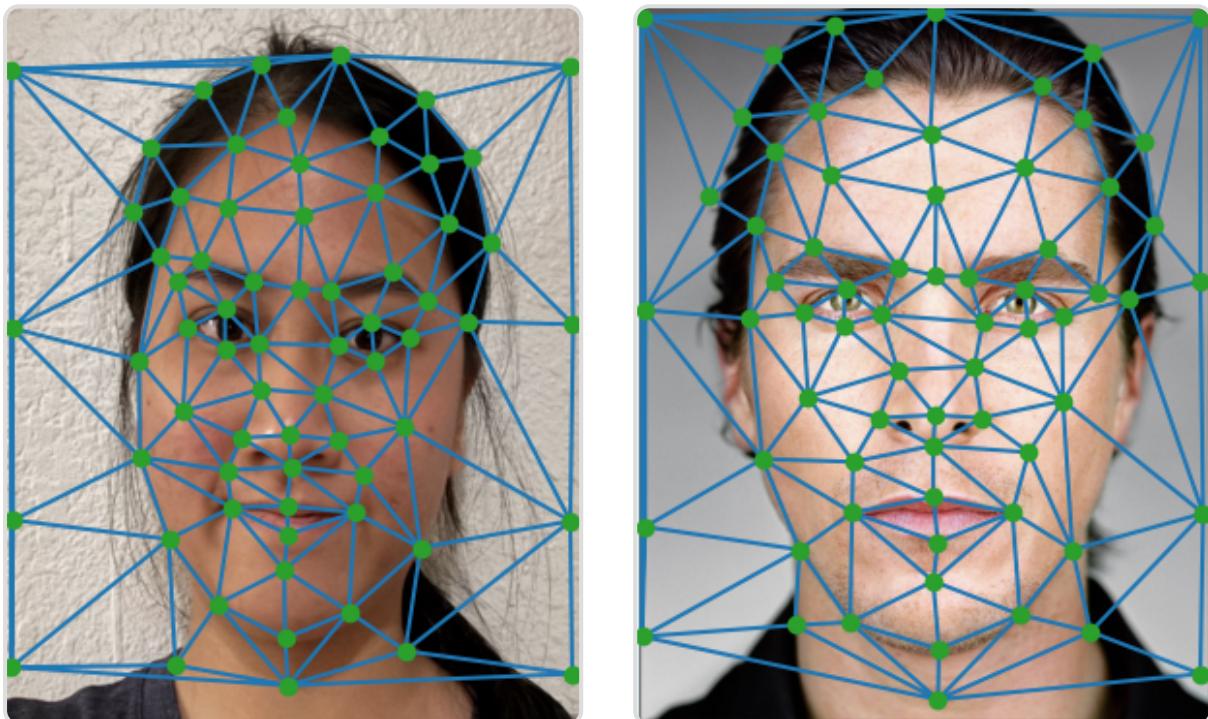


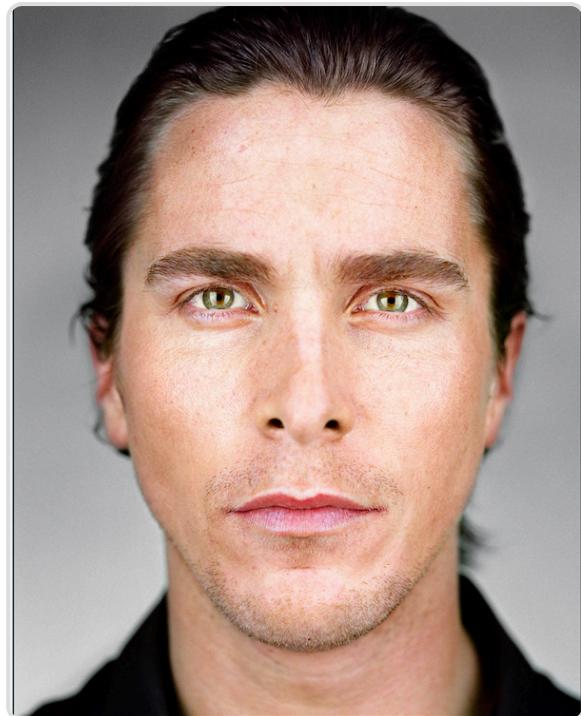
# Part 1. Defining Correspondences

In this part of the process, I define corresponding points on two images of faces to facilitate morphing between them. I manually select pairs of keypoints on both images, ensuring consistent labeling between the two faces for accurate morphing. Using a tool created by a former student, found [here](#), I plot and save these points for future use. I compute a Delaunay triangulation based on the average shape of the two sets of points, creating a well-defined mesh that avoids overly skinny triangles. This triangulation is applied uniformly across the morph.



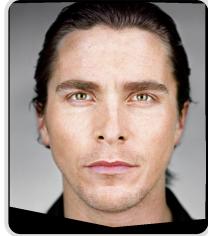
# Part 2. Computing the "Mid-way Face"

In Part 2, I compute the "mid-way face" between images of me and Christian Bale. I calculate the average shape by averaging the keypoints from both faces. Then, I warp both faces into this average shape using affine transformations for each triangle in the triangulation. The warped images are combined by averaging the pixel values, resulting in the mid-way face.



## Part 3. The Morph Sequence

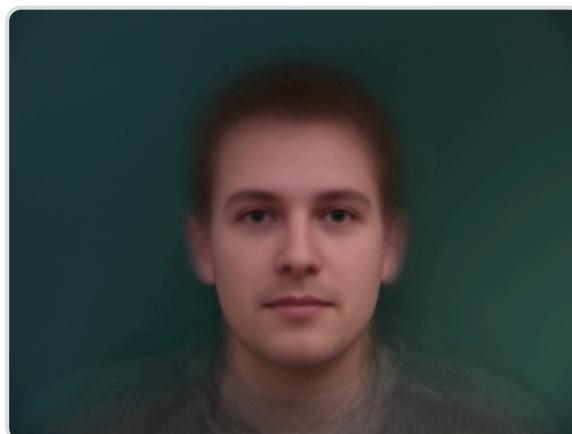
I created a morph sequence transitioning between two images using point correspondences and a triangulation structure. The sequence is generated by gradually changing the shape (`warp_frac`) and blending colors (`dissolve_frac`) between the two images. Below is a set of images from the morphing sequence, as well as an animated GIF that visually demonstrates the smooth transition from my face to Christian Bale's.



## Part 4. The "Mean Face" of a Population

For this part, I used the Danes dataset to compute the average face shape of a population. I selected keypoints across the dataset, morphed each face into the average shape, and then computed the average face. I also warped my face to match the average geometry and warped the average face to match mine.

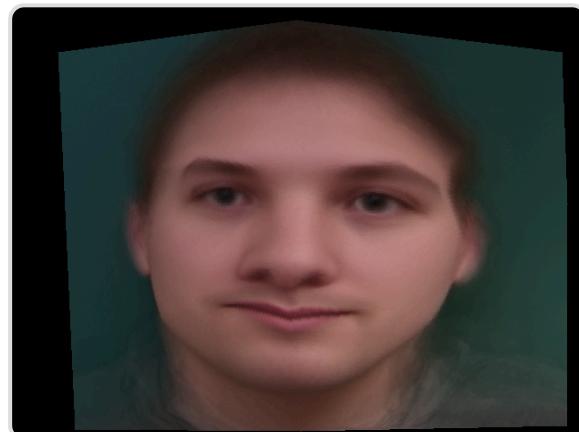
**Average Dane**



## Me to Average Danes



Average Dane to Me



## Part 5. Caricatures: Extrapolating from the Mean

I created a caricature of my face by extrapolating from the population mean face I computed in the previous step. To do this, I exaggerated the differences between my facial features and the average face. By scaling the difference between my face's keypoints and the population mean, I pushed my facial features further away from the mean, which accentuates my unique characteristics.

Caricature with Alpha = 1.1

Caricature with Alpha = 2



## Bells and Whistles

In my project, I performed facial morphing to change my appearance by using an average image of a Chinese man as a reference.

Average Chinese Man

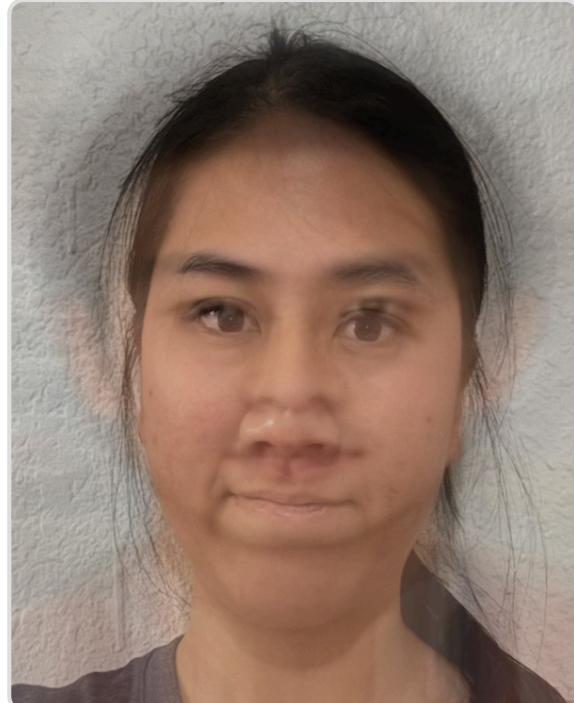


Me



Shape Only

Appearance Only



### Shape and Appearance

