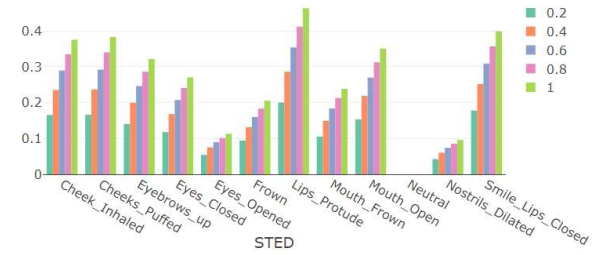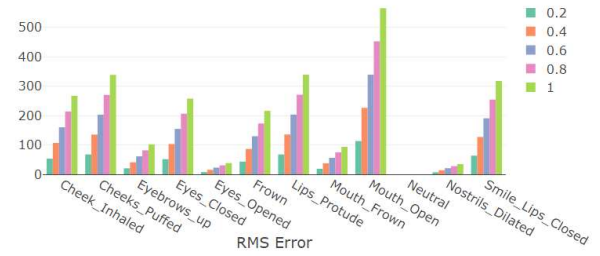Figure 9: Image errors averaged across characters.

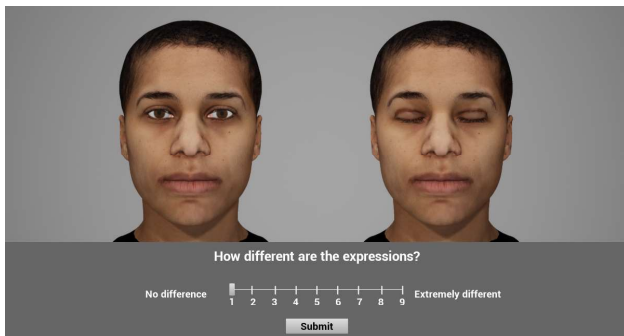Figure 8: Geometry errors averaged across characters.

Figure 7: The experiment system in UE4 showing the character we used for training, which was also the template model used to create the experiment character rigs.

Order	RMS	STED	MSE	1-SSIM	Perceptual
1	Mouth Open	Lips Protrude	Mouth Open	Frown	Mouth Open
2	Lips Protrude	Smile Lips Closed	Frown	Mouth Open	Eyes Closed
3	Cheeks Puffed	Cheeks Puffed	Eyes Closed	Smile Lips Closed	Smile Lips Closed
4	Smile Lips Closed	Cheek Inhaled	Smile Lips Closed	Cheek Inhaled	Eyebrows Up
5	Cheek Inhaled	Mouth Open	Eyebrows Up	Lips Protrude	Lips Protude
6	Eyes Closed	Eyebrows Up	Lips Protrude	Eyes Closed	Cheek Inhaled
7	Frown	Eyes Closed	Cheeks Puffed	Eyebrows Up	Eyes Opened
8	Eyebrows Up	Mouth Frown	Cheek Inhaled	Cheeks Puffed	Cheeks Puffed
9	Mouth Frown	Frown	Eyes Opened	Mouth Frown	Mouth Frown
10	Eyes Opened	Eyes Opened	Mouth Frown	Eyes Opened	Frown
11	Nostrils Dilated	Nostrils Dilated	Nostrils Dilated	Nostrils Dilated	Nostrils Dilated

Table 9: Our AUs ordered by each of the different error metrics and the perceptual results, averaged across all characters and Activation Levels.
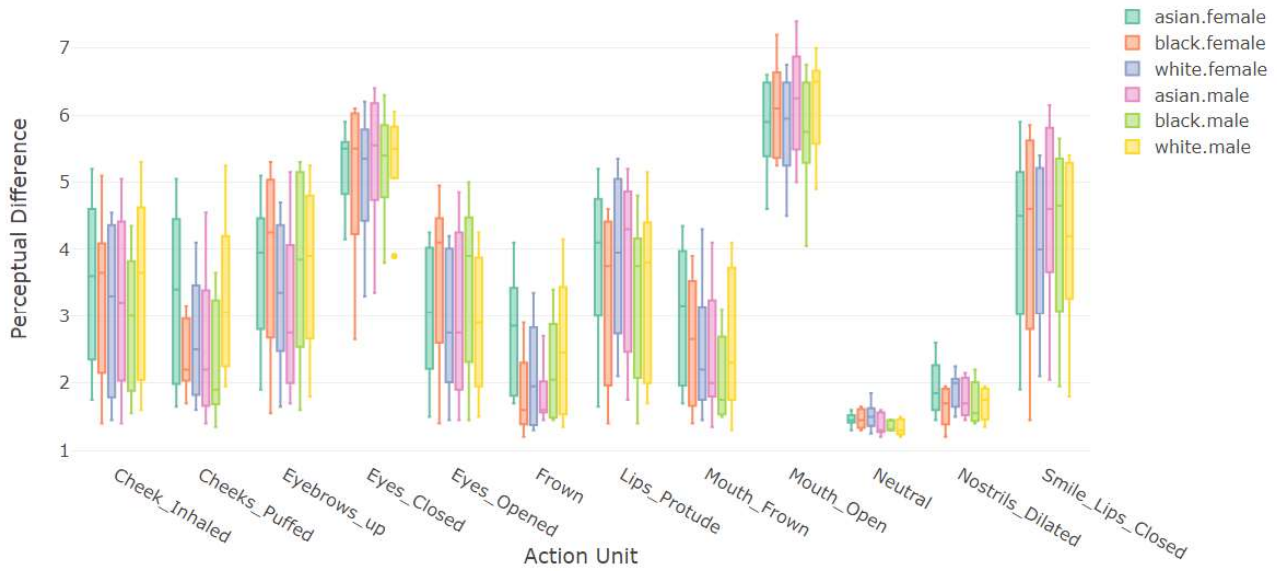

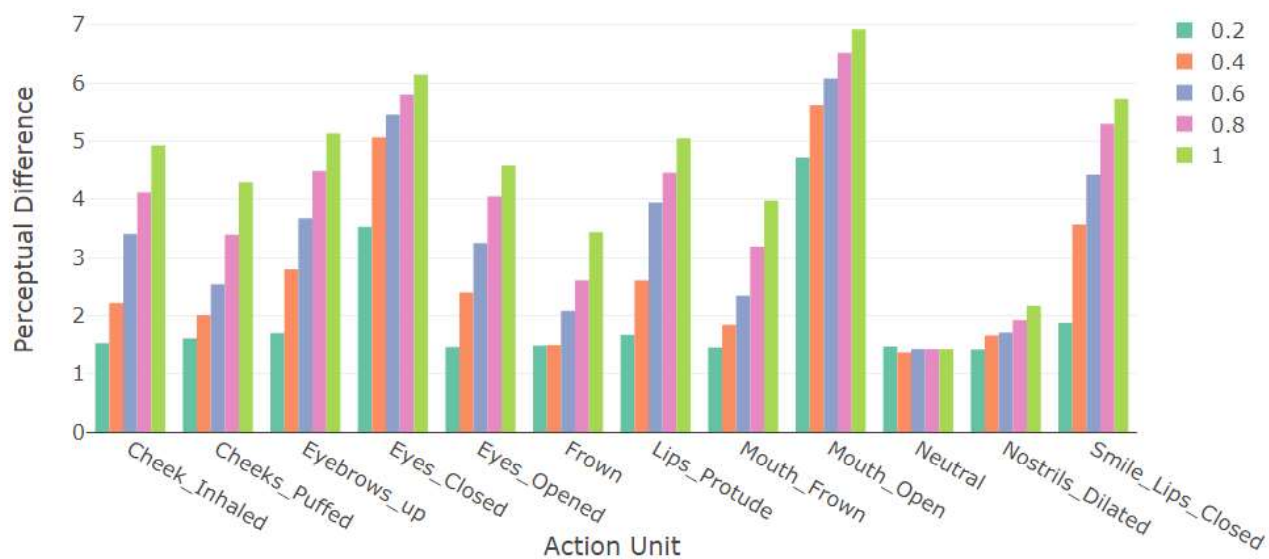**Figure 10: Interaction of AU, Sex, and Race from our experiment.**

Figure 11: Interaction of AU and Activation from our experiment.