

When Humans Judge Irises: Pupil Size Normalization as an Aid and Synthetic Irises as a Challenge (Supplementary Materials)

This document presents the materials supplementing the results and illustrations provided in the main paper.

Figure 1 illustrates the distribution of matching scores computed using the HDBIF method for 5,000 synthetic samples generated by StyleGAN and 5,000 samples produced by the diffusion model. As observed in the figure, the StyleGAN model generates synthetic samples with a lower matching score compared to those generated by the diffusion model. A lower HDBIF matching score is interpreted as an indicator of higher authenticity.

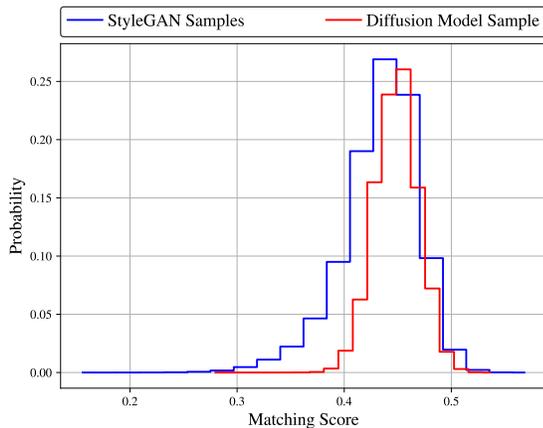


Figure 1. HDBIF scores for synthetic iris samples generated by StyleGAN and Diffusion models.

Figure 2 presents the matching scores computed using the HDBIF method for selected irises in Scenario I across all six sample groups which includes irises from both genuine and impostor samples deformed by either EyePreserve or linear models under three different pupil sizes: “small”, “middle”, “large”. The resulting distributions illustrate the degree of separation between the selected genuine and impostor samples. Genuine samples deformed by the non-linear model yielded lower matching scores than those deformed by the linear model. In contrast, for impostor samples with small or medium pupil sizes, the non-linear model obtained higher matching scores.

Figure 3 presents the matching scores computed using the HDBIF method for Scenario II across all four sample groups: “authentic-genuine”, “authentic-impostor”, “synthetic-genuine”, and “synthetic-impostor”. Most synthetic-genuine sample pairs showed matching scores around 0.3, while impostor samples showed scores closer to 0.5. The resulting distributions illustrate the degree of separation between the selected genuine and impostor samples.

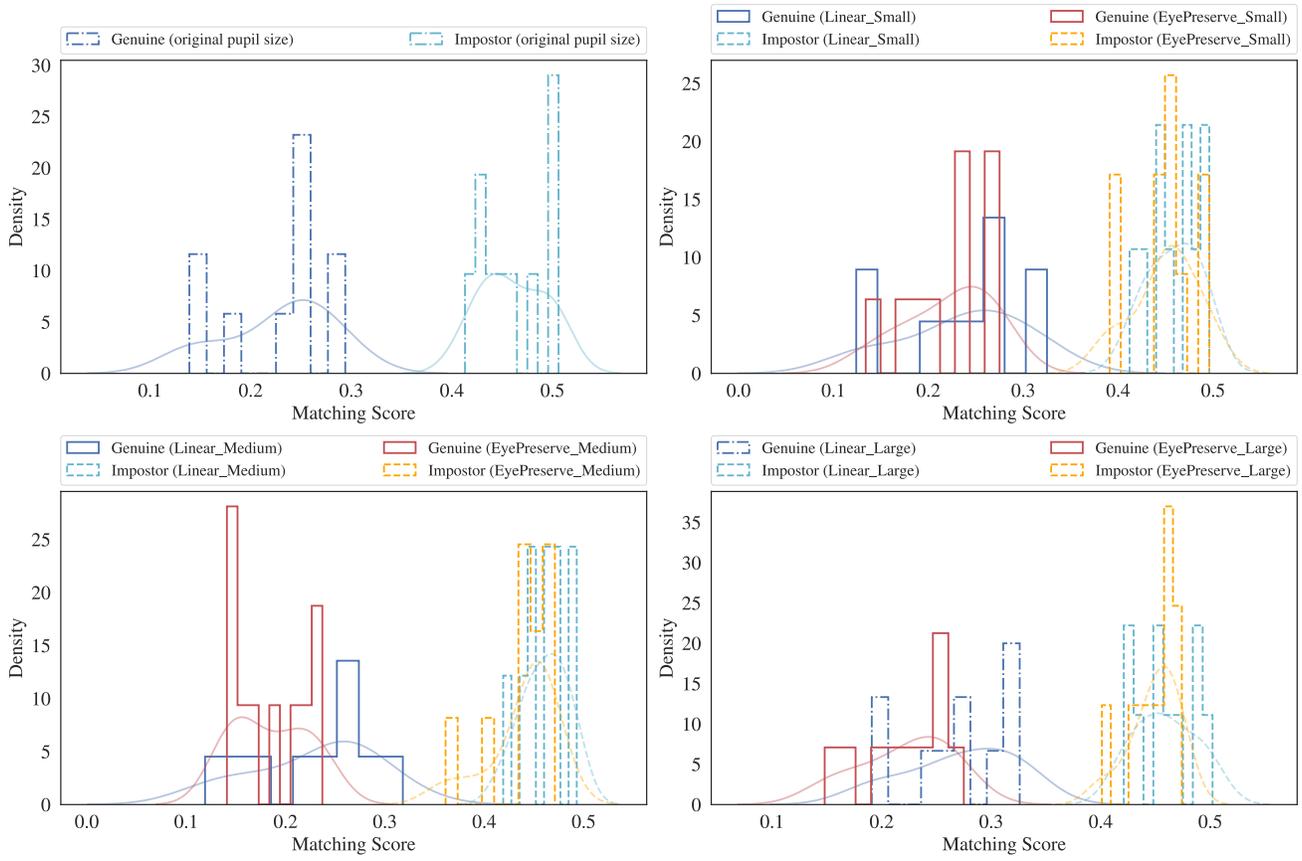


Figure 2. HDBIF scores for the selected samples in Scenario I.

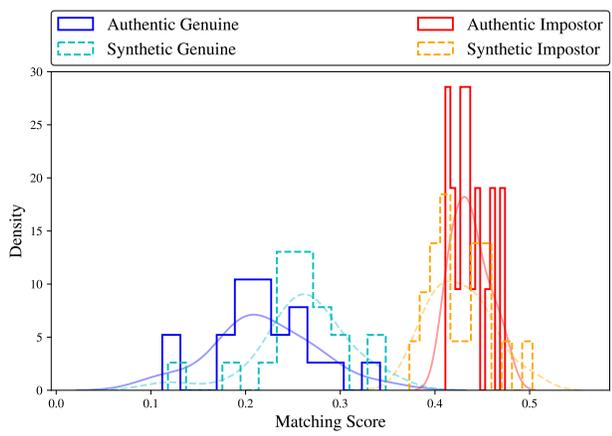


Figure 3. HDBIF scores for the selected samples in Scenario II.