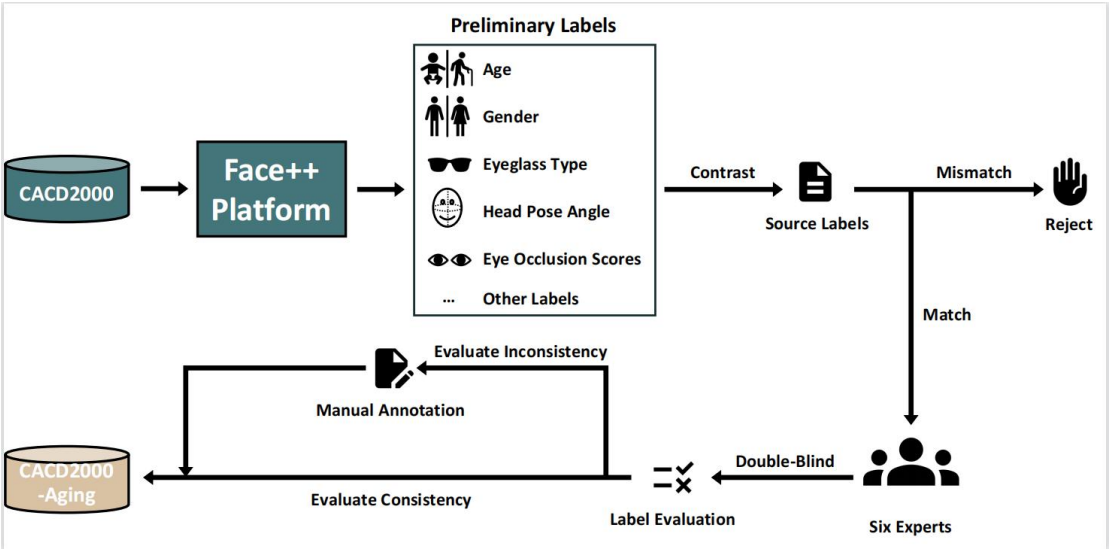
Dataset Cleaning Process for CACD2000-Aging Dataset



CACD2000-Aging dataset re-annotation flowchart

In the preparation of the publicly available CACD2000-Aging dataset, adherence to design principles and a series of rigorous cleaning steps were undertaken, including the following key procedures:

1. Utilizing the Face++[1] platform, re-annotation of all 163,446 images in CACD2000[1]was conducted with age, gender, head pose angle, eyeglasses type (none, normal, or dark), and left and right eye occlusion scores. This meticulous labeling process generated detailed labels for 163,364 images.
2. Following the pruning process similar to LATS [2], exclusion criteria were applied to instances with gender confidence below 0.66, mismatched age groups compared to the labels by Chen et al.[1], head deflection angle greater than 40°, head pitch angle greater than 30°, dark glasses label scores greater than 90, and eye shading greater than 50.
3. To enhance label accuracy, incorporation of manual correction by six human experts was implemented to reject mislabeled labels. This process resulted in accurate labels for 68,985 images.
4. In double-blind conditions, the labels were evaluated by the experts. Consistent evaluations were included in the CACD2000-Aging dataset, and any inconsistencies underwent manual annotation by the six experts, ensuring high-quality final labels.
5. Through repeated reviews and discussions among the experts, the accuracy and consistency of labels were maintained during the re-annotation process, thus improving the reliability and usability of the dataset. Double-blind evaluation conditions minimized subjective bias and enhanced labeling objectivity.
6. Utilizing Huawei's face parsing SDK[2], face semantic maps for these images were extracted, generating a total of 65,483 images (3,502 failed to be parsed). After screening by six human experts, elimination of all segmentation error semantic maps resulted in 49,716 images with accurate labels and corresponding face semantic maps.

1. https://www.faceplusplus.com/
2. https://developer.huawei.com/consumer/cn/hiai/engine/face-parsing

The entire dataset cleaning process spanned about one month. Complete information, including the label list of intermediate steps, the final label list, and the face semantic map, will be provided in the open source dataset .

REFERENCES

[1] Bor-Chun Chen, Chu-Song Chen, and Winston H Hsu. Cross-age reference coding for age-invariant face recognition and retrieval. In ECCV, pages 768–783, 2014.

[2] Roy Or-El, Soumyadip Sengupta, Ohad Fried, Eli Shechtman, and Ira Kemelmacher-Shlizerman. Lifespan age transformation synthesis. In ECCV, pages 739–755, 2020.