

Illumination-aware Age Progression

CVPR 2014 Supplementary Material

Ira Kemelmacher-Shlizerman, Supasorn Suwajanakorn, Steven M. Seitz
<http://grail.cs.washington.edu/aging/>

Age Progression

Which of the two photos on the right is more likely to be the input person but at the specified age?
 Please ignore facial expression, pose, and image quality differences.

Please make sure that all questions are answered, otherwise we may reject your hit.

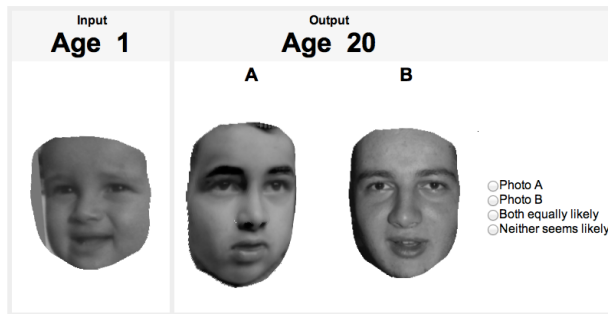


Figure 1: Our Mechanical Turk test to compare with ground-truth. We show the input image (far left), our result (middle), and ground truth (right). Note that if the progressed image at age Y is generated from the reference at age X , it will have the same lighting and expression. To avoid this similarity bias, we show to the user a different input photo of the same person at the closest age to the input. Also, the order of our and ground truth was randomly chosen to prevent order bias.

Age Progression

Which of the two photos on the right is more likely to be the input person but at the specified age?
 Please ignore facial expression, pose, and image quality differences.

Please make sure that all questions are answered, otherwise we may reject your hit.



Figure 2: Our Mechanical Turk test to compare with previous work. We show the input image (far left), our result (in this case A; we randomize the order of ours and previous to prevent bias), and previous result (in this case B).

Decide whether the two images shown below are of the same person (possibly at different ages) OR different people.
 Please make sure that all questions are answered, otherwise we may reject your hit.

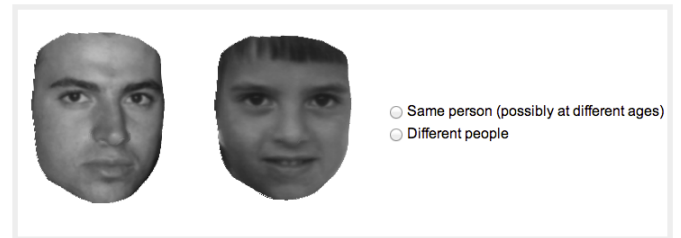


Figure 3: Our Mechanical Turk test to evaluate human proficiency at recognizing the same person across different ages. In each test two real (ground truth) images of the same person, separated by at least 5 years, are shown.

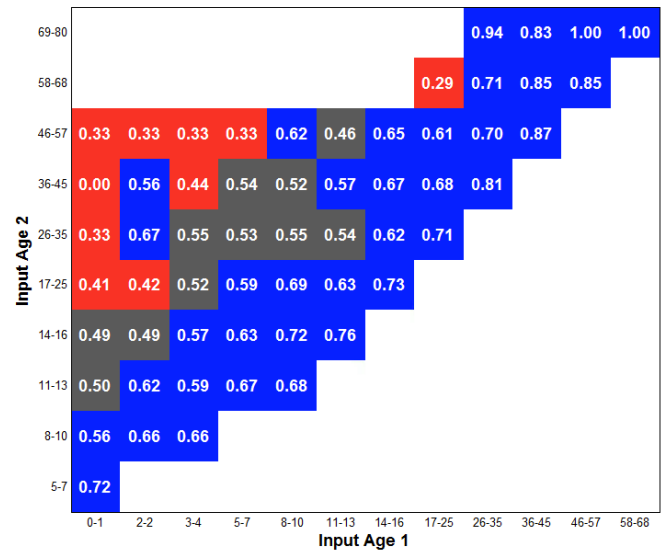


Figure 4: Results of human study in Fig. 3. The results indicate that people are generally good at recognizing adults across different age ranges, but poor at recognizing children after many years. In particular across children aged 0-7, participants performed barely better than chance (57%) at recognition for roughly 10 year differences, at chance for 20 years (52%), and worse than chance for 50 years (33%).

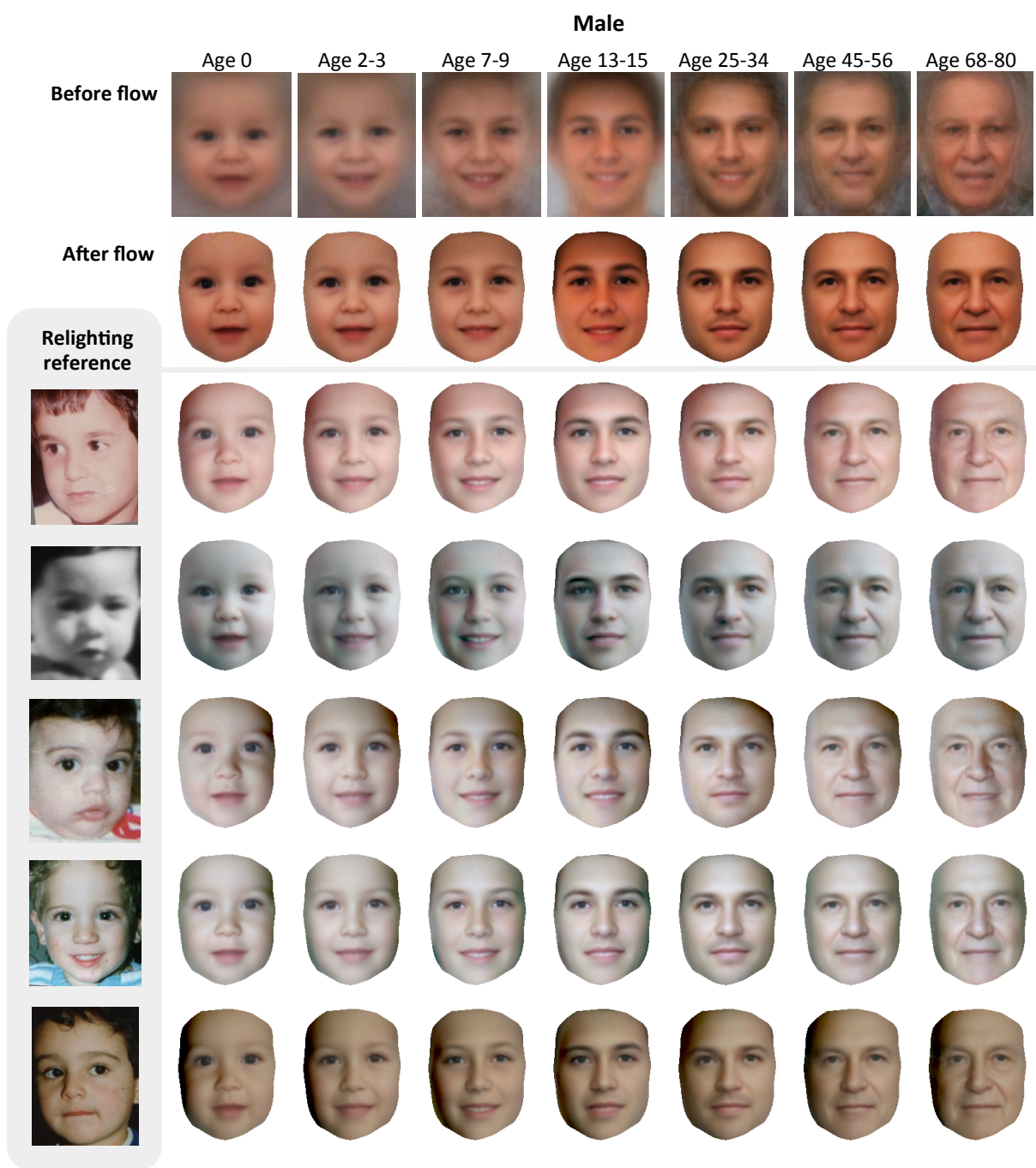


Figure 5: Higher resolution averages of people at different ages, and additional re-lit averages and corresponding relighting references (left). These are for the dataset of males.

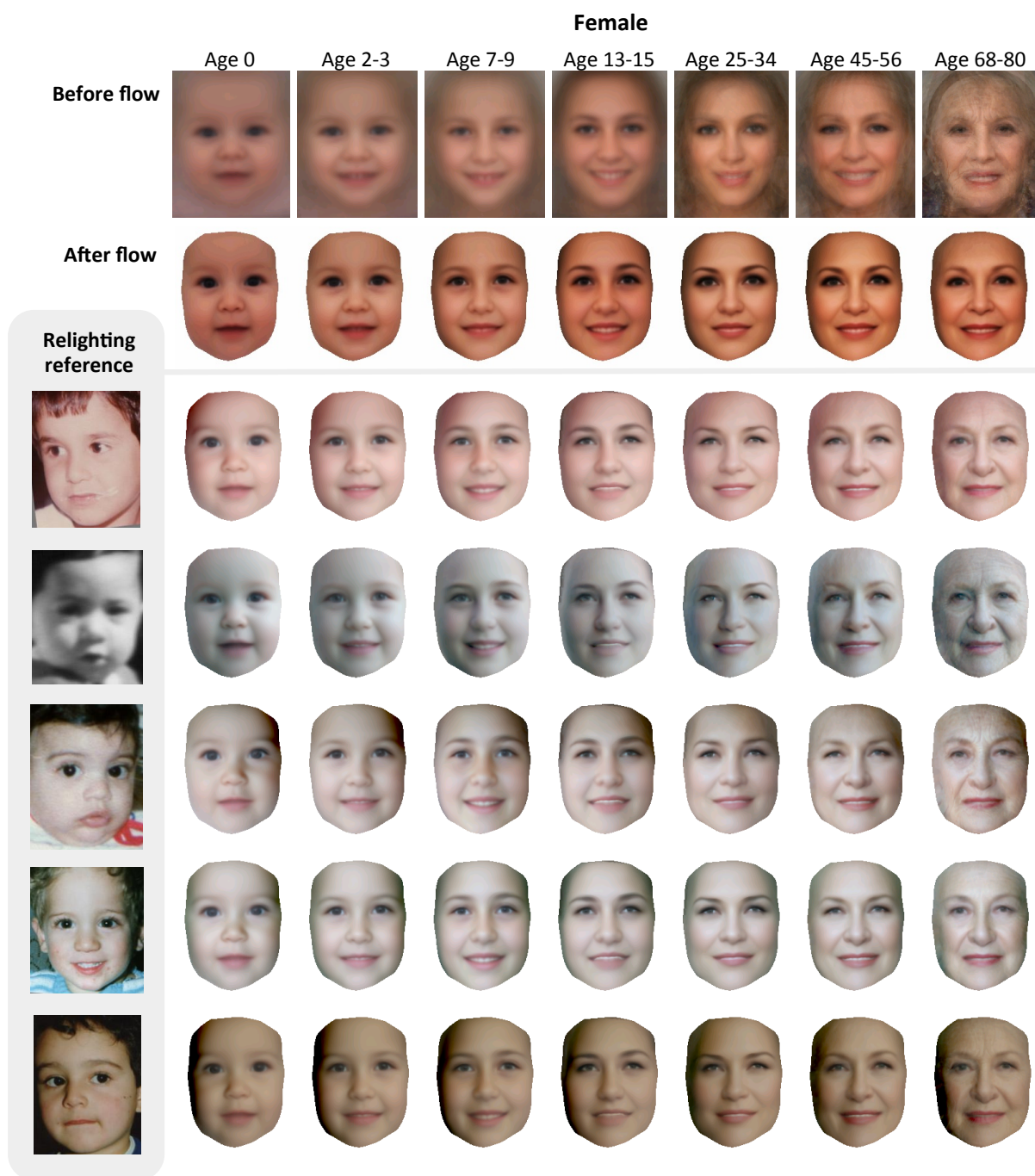


Figure 6: Higher resolution averages of people at different ages, and additional re-lit averages and corresponding relighting references (left). These are for the dataset of females.



Figure 7: Age progression results. For each input image (left) we automatically generate age progression photos in different ages.



Figure 8: Age progression and comparison to cropped ground truth images. In each case a single photo of a child (top) is age progressed (left) and compared to photos of the same person (right) at the corresponding age (labeled at left). Note that lighting and facial expression are not designed to match.



Figure 9: Additional age progressions and comparison to ground-truth images. We show the input image (top), our result for each age (left) and ground-truth (right). For each example the age label is on the left. Note that lighting and facial expression are not designed to match.

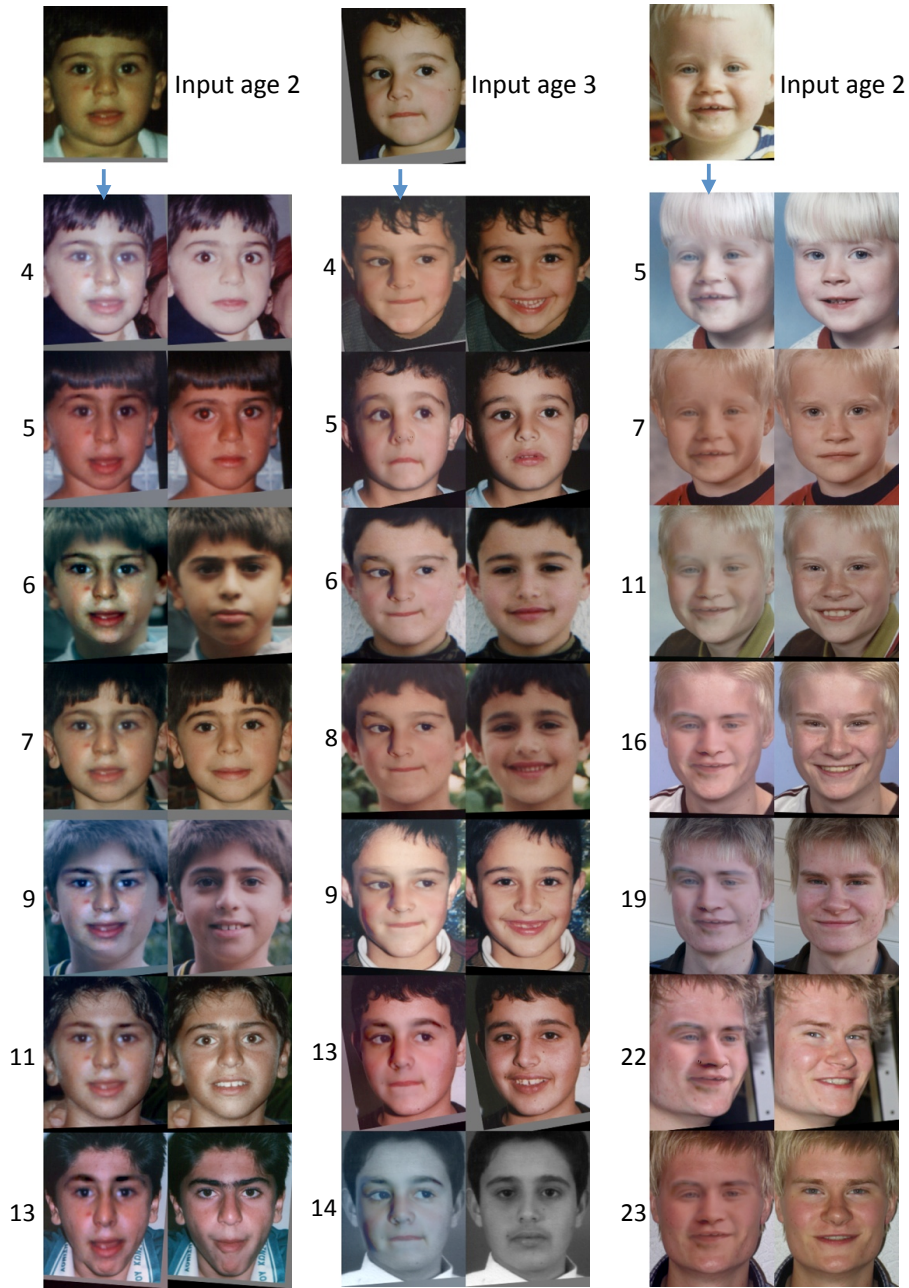


Figure 10: Additional age progressions and comparison to ground-truth images. We show the input image (top), our result for each age (left) and ground-truth (right). For each example the age label is on the left. Note that lighting and facial expression are not designed to match.

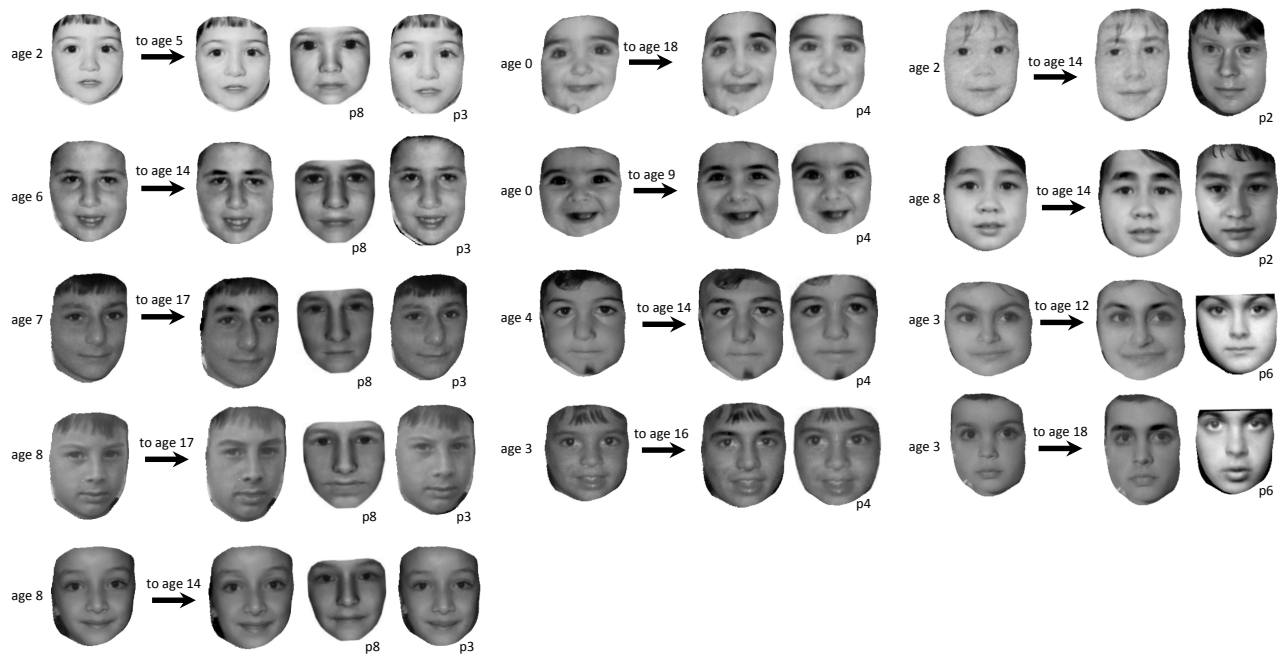


Figure 11: Comparison to related works. These are *all* the results of young children (under 9 years old) found in related works (p1-p8). In each case a single photo of a child is age progressed using our method and compared to age progression result of a related work on the same input (paper number is labeled at bottom right of each result, our result is not labeled).

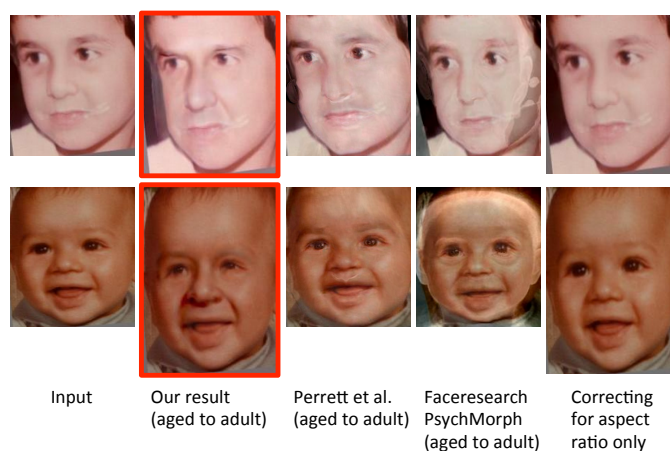


Figure 12: Additional comparisons to online aging applications.