

CLAIMS

1. A system, comprising:
a processor configured to:
determine an event associated with updating a current model of a user's face;
5 in response to the event, use a set of historical recorded frames of the user's
face to update the current model of the user's face;
obtain a newly recorded frame of the user's face;
use the current model of the user's face to generate a corresponding image of a
glasses frame;
10 present the image of the glasses frame over the newly recorded frame of the
user's face; and
a memory coupled to the processor and configured to provide the processor with
instructions.
2. The system of claim 1, wherein the event is based at least in part on: an elapsed time,
15 a number of newly recorded frames meeting a threshold, or a detected orientation of the
user's face.
3. The system of claim 1, wherein the set of historical recorded frames of the user's face
includes those recorded frames within a time threshold.
4. The system of claim 1, wherein the current model of the user's face is obtained from
20 depth sensor data collected by a device.
5. The system of claim 1, wherein the current model of the user's face is generated based
at least in part on faces of historical users.
6. The system of claim 1, further comprising updating the current model of the user's
face including by:
25 obtaining a current orientation of a user's face;
transforming the current model of the user's face corresponding to the current
orientation;
combining the transformed model of the user's face with a model of a glasses frame;
and
30 generating a current image of the glasses frame based at least in part on the

combination of the transformed model of the user's face with a model of a glasses frame.

7. The system of claim 6, wherein transforming the current model of the user's face corresponding to the current orientation includes scaling user's face including by:

receiving a two-dimensional (2D) RGB image and a depth image;

5 finding coordinates associated with a 2D feature in the 2D RGB image;

use resolution mapping between the 2D RGB image and the depth image and the

found 2D coordinates to determine 3D feature coordinates in the depth image; and

determine real life dimensions feature pair distance in 2D space using the 3D feature coordinates.

10 8. The system of claim 6, wherein transforming the current model of the user's face corresponding to the current orientation includes scaling user's face including by:

receiving a two-dimensional (2D) RGB image and a depth image;

unprojecting 3D feature coordinates in the depth image to a 3D head model to obtain 3D feature coordinates using extrinsic information corresponding to a RGB image;

15 determining a first feature pair distance using the 3D feature coordinates;

determining a second feature pair distance using the depth image; and

determining a scale coefficient as a ratio of the first feature pair distance and the second feature pair distance.

9. The system of claim 6, wherein transforming the current model of the user's face corresponding to the current orientation includes scaling user's face including by:

20 receiving one or more RGB images, one or more depth sensor images, pose information, and camera intrinsics;

for each point in each depth sensor image, using camera intrinsics to generate a 3D point in real life scale;

25 using pose information to merge 3D points from images into a point cloud with real life scale;

using historical head scans from storage to generate a model of the user's face with real life scale that matches the shape of the point cloud; and

30 using the generated model of the user's face to generate a corresponding image of a glasses frame.

10. The system of claim 1, further comprising a camera configured to record frames of the user's face, wherein the camera includes at least one depth sensor.

11. The system of claim 1, wherein presenting the image of the glasses frame over the newly recorded frame of the user's face includes rendering the image of the glasses frame over the newly recorded frame of the user's face in a graphical user interface.
12. The system of claim 1, wherein obtaining a newly recorded frame of the user's face includes displaying feedback to the user regarding at least one of captured facial angles and facial angles that are not yet fully processed.
13. The system of claim 1, wherein the processor is further configured to present information about a degree of fit to at least one area of the user's face.
14. The system of claim 1, wherein obtaining a newly recorded frame of the user's face and presenting the image of the glasses frame over the newly recorded frame of the user's face is performed substantially simultaneously.
15. The system of claim 1, wherein the processor is further configured to present an image of the glasses frame over a previously recorded frame of the user's face.
16. The system of claim 15, wherein the image of the glasses frame over a previously recorded frame of the user's face and the image of the glasses frame over a newly recorded frame of the user's face are presented side by side.
17. The system of claim 1, wherein the processor is further configured to:
receive user selection of a specific glasses frame from among a selection of glasses frames; and
present the image of the specific glasses frame over the newly recorded frame of the user's face.
18. The system of claim 1, wherein the processor is further configured to output progress of obtaining a newly recorded frame of the user's face.
19. A system, comprising:
a processor configured to:
obtain a set of images of a user's head;
determine an initial orientation of the user's head;
obtain an initial model of the user's head;
transform the initial model of the user's head corresponding to the initial orientation;
receive a user selection of a glasses frame;

- combine the transformed model of the user's head with a model of the glasses frame;
- generate an image of the glasses frame based at least in part on the combination of the transformed model of the user's head with a model of the glasses frame; and
- provide a presentation including by overlaying the image of the glasses frame over at least one image of the set of images of the user's head; and
- a memory coupled to the processor and configured to provide the processor with instructions.
20. A system, comprising:
- a processor configured to:
- receive one or more RGB images, one or more depth sensor images, pose information, and camera intrinsics;
- for each point in each depth sensor image, use camera intrinsics to generate a 3D point in real life scale;
- use pose information to merge 3D points from images into a point cloud with real life scale;
- use historical head scans from storage to generate a 3D head model with real life scale that matches the shape of the point cloud; and
- use the generated 3D head model to generate a corresponding image of a glasses frame; and
- a memory coupled to the processor and configured to provide the processor with instructions.
21. A method, comprising:
- determining an event associated with updating a current model of a user's face;
- in response to the event, using a set of historical recorded frames of the user's face to update the current model of the user's face;
- obtaining a newly recorded frame of the user's face;
- using the current model of the user's face to generate a corresponding image of a glasses frame; and
- presenting the image of the glasses frame over the newly recorded frame of the user's face.
22. A computer program product embodied in a non-transitory computer readable

medium and comprising computer instructions for:

determining an event associated with updating a current model of a user's face;

in response to the event, using a set of historical recorded frames of the user's face to

update the current model of the user's face;

5 obtaining a newly recorded frame of the user's face;

using the current model of the user's face to generate a corresponding image of a
glasses frame; and

presenting the image of the glasses frame over the newly recorded frame of the user's
face.