Real-time Webcam Face Reconstruction from 2D to 3D

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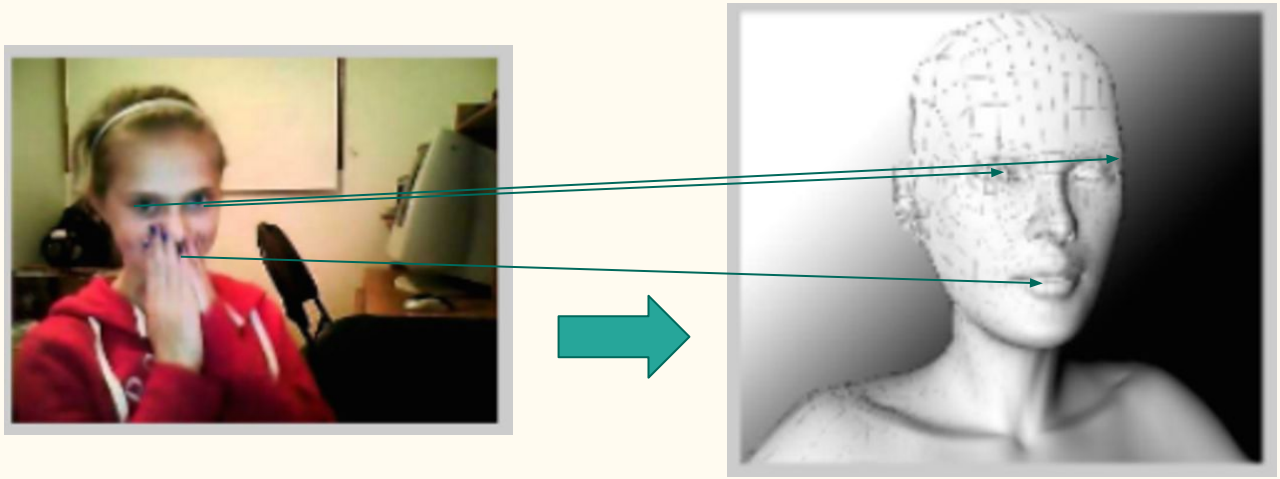
Main Idea



- Morphing Target Animation (to blend shapes)+base, Interpolation

Final Mesh = base mesh + sum (each weight * each difference of target and base)

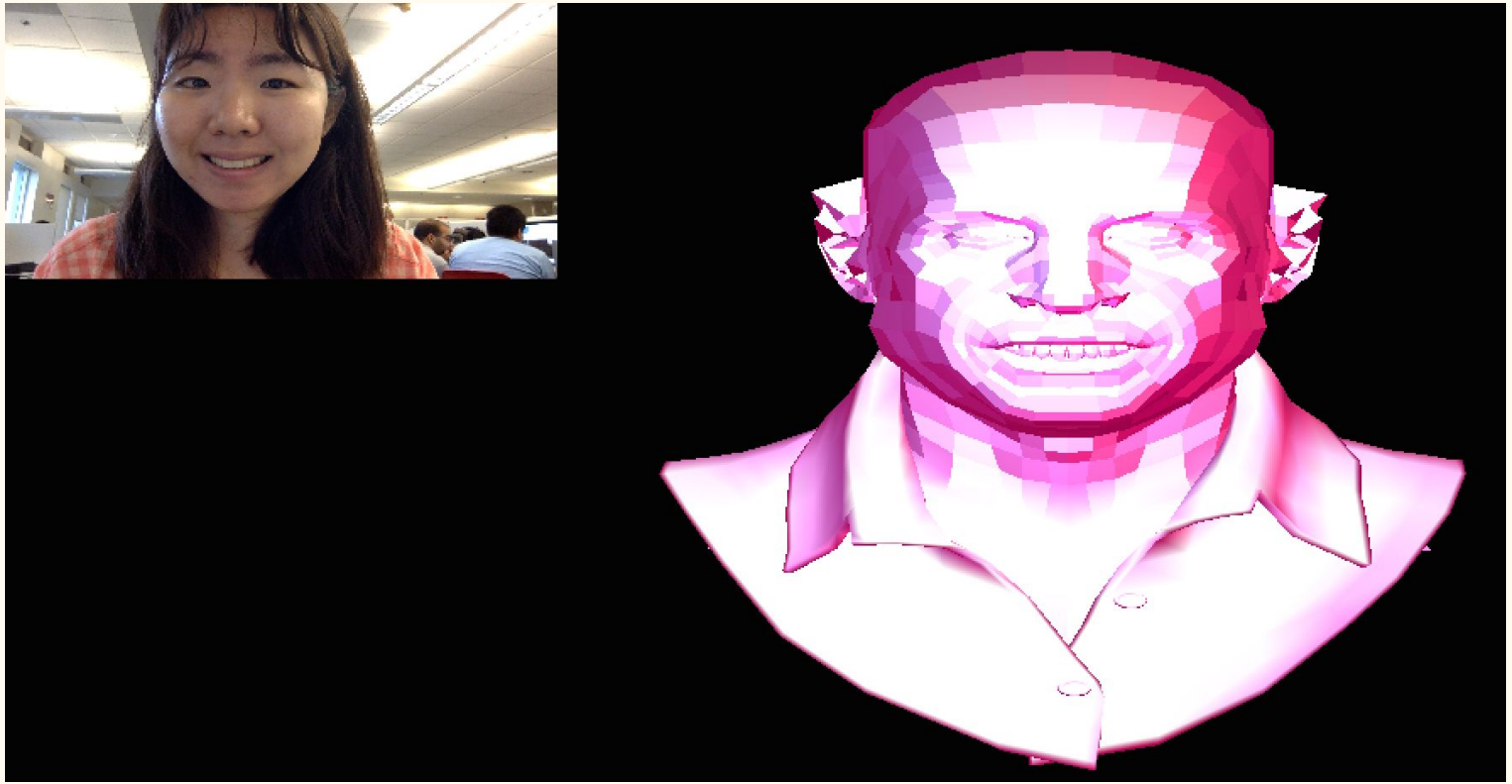
- C++ (OpenGL, OpenCV, Dlib libraries)

Steps for the implementation

1. Create objects to hold coord info for vertices in meshes
2. Uniform variables to control all meshes
3. Get webcam frame images => show those images as texture mapping
4. From each webcam image => get landmark points of a face
5. Store some specific information from the landmark points
6. (distance between lips in width and height, distance between eyelids, eyes, lips)
7. Store variations of vertices in each target mesh
8. & store variations of 2D points of the stored landmark points
9. For each variation of the landmark points, set corresponding weights for each target

Final Mesh = base mesh + sum (each weight * each var of target and base)

Example of the running program



What I can do in the future

- Implement better interpolation methods
- Pose correction
- Texture mapping from real human images
- Automatic calculations of each weight