16TH EUROPEAN CONFERENCE ON
COMPUTER VISION

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Personalized Face Modeling for Improved Face Reconstruction and Motion Retargeting

Bindita Chaudhuri[1], Noranart Vesdapunt[2]
Linda Shapiro[1], Baoyuan Wang[2]

[1]University of Washington [2]Microsoft Cloud and AI

PAUL G. ALLEN SCHOOL
OF COMPUTER SCIENCE & ENGINEERING

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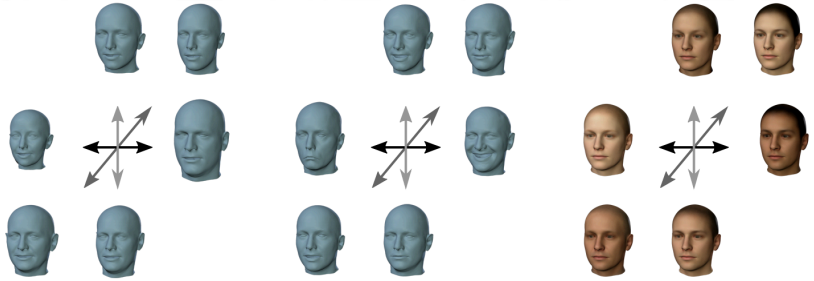
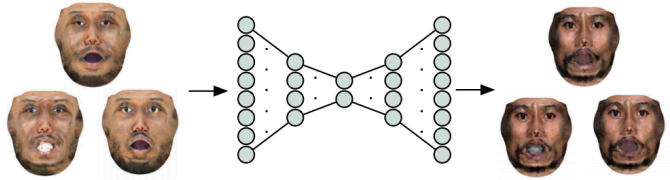
Challenges

Face model representation by existing methods is not user-specific;
hence insufficient for both reconstruction and retargeting



3D parametric face models[1] (3DMM)

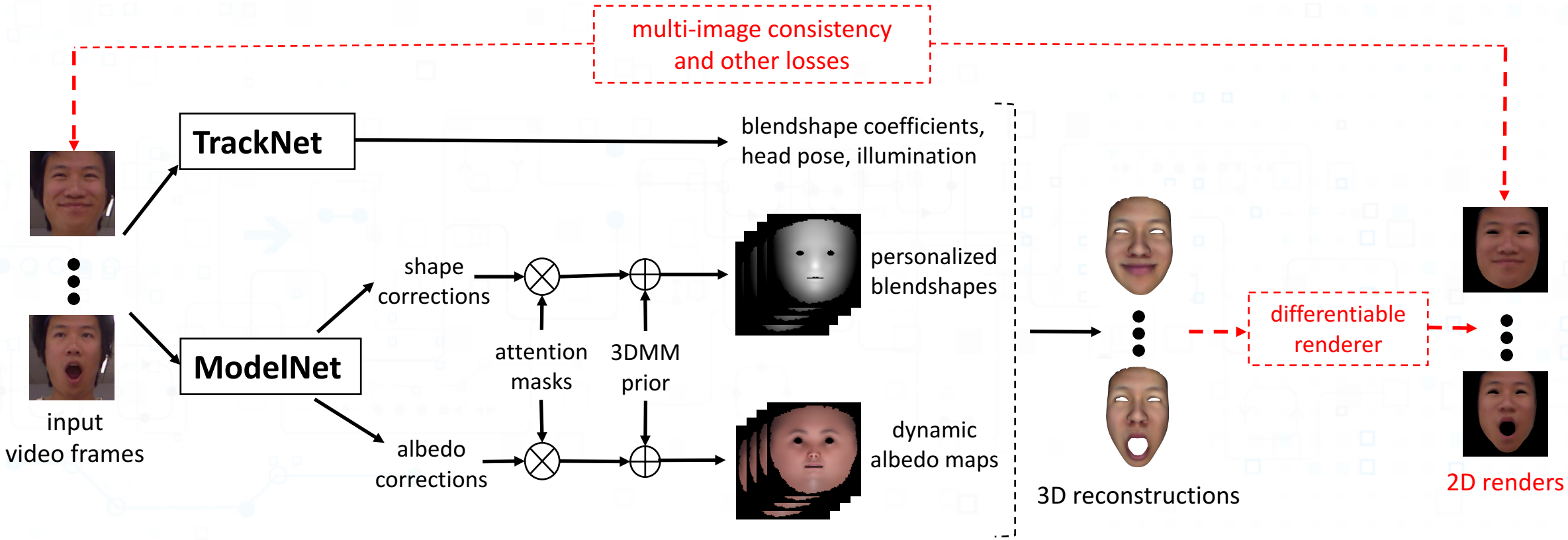
Blendshape deformation transfer[2]



Face texture synthesis[3]

[1]3D Morphable Face Models - Past, Present and Future, B.Egger et al., *ACM TOG June 2020*
[2]Deformation Transfer for Triangle Meshes, Sumner and Popovic, *SIGGRAPH 2004*
[3]Realistic Dynamic Facial Textures from a Single Image using GANs, Olszewski et al., *ICCV 2017*

Proposed Framework

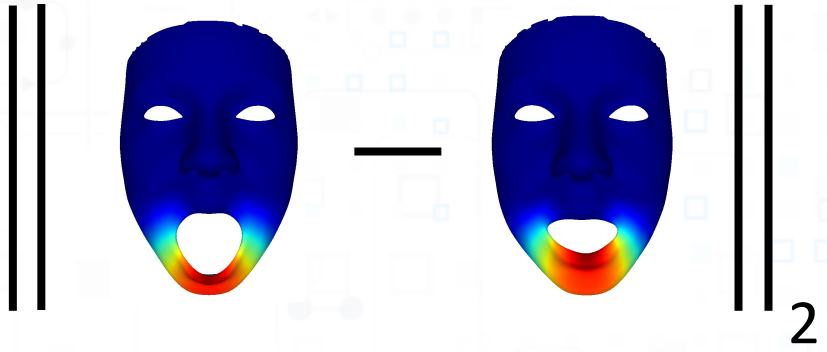


Novel Training Constraints

Face parsing loss

- Disentangles geometry from albedo
- Provides stronger supervision than 2D landmarks

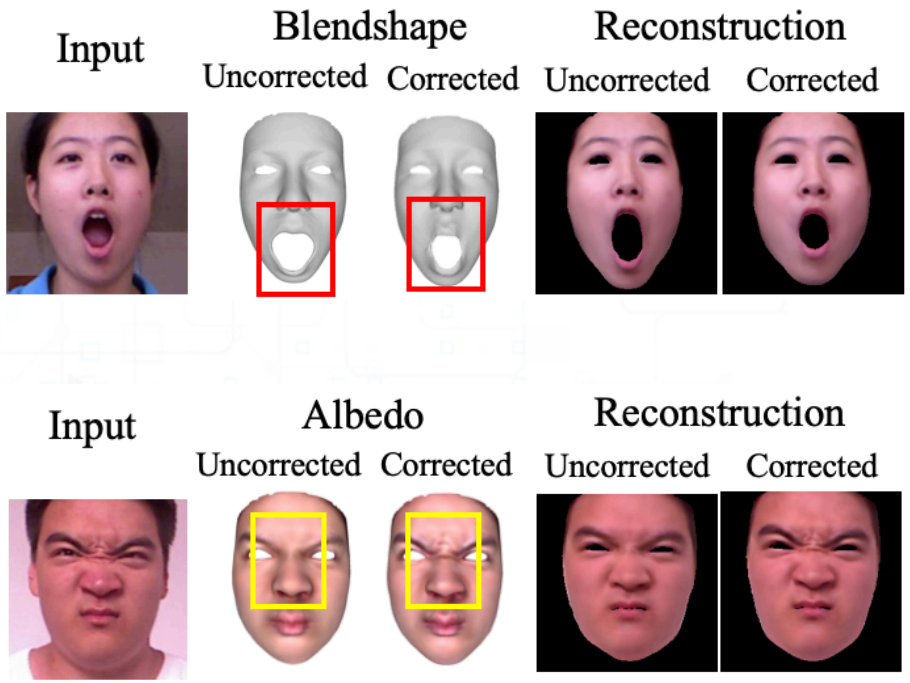
Blendshape gradient loss



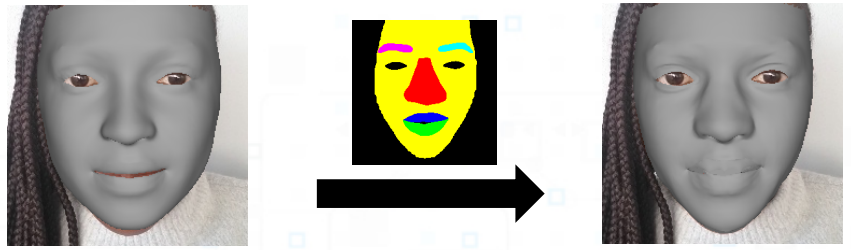
- Regularizes geometry correction
- Retains semantic meaning of blendshapes

Importance of Personalized Modeling

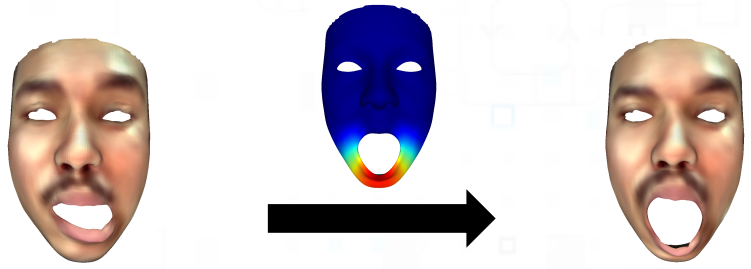
User-specific face model



Corrected geometry with parsing loss

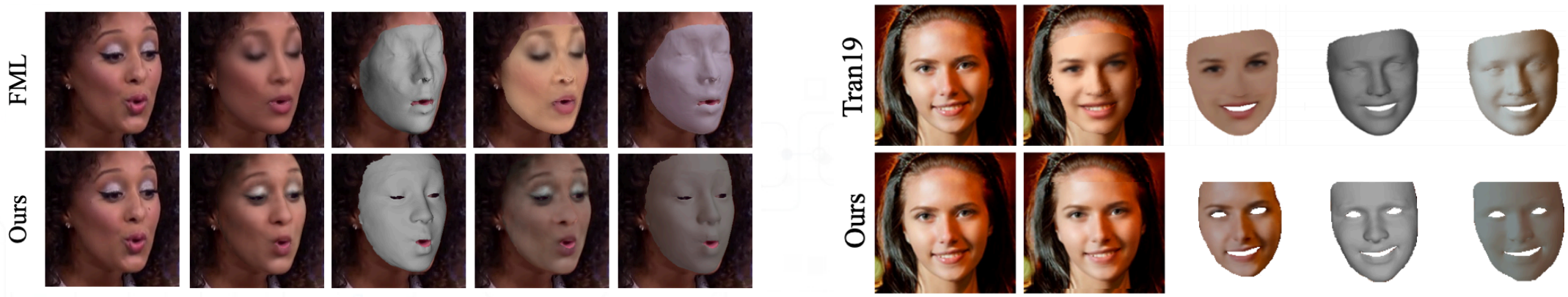


Semantically correct personalized blendshapes

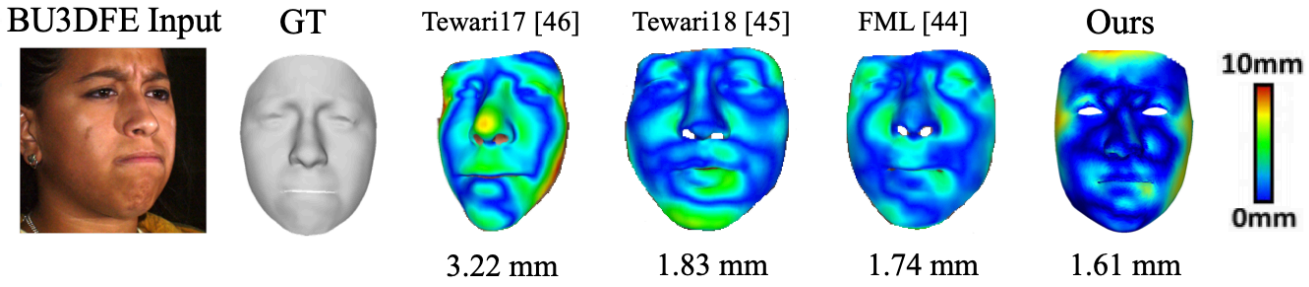


Reconstruction Results

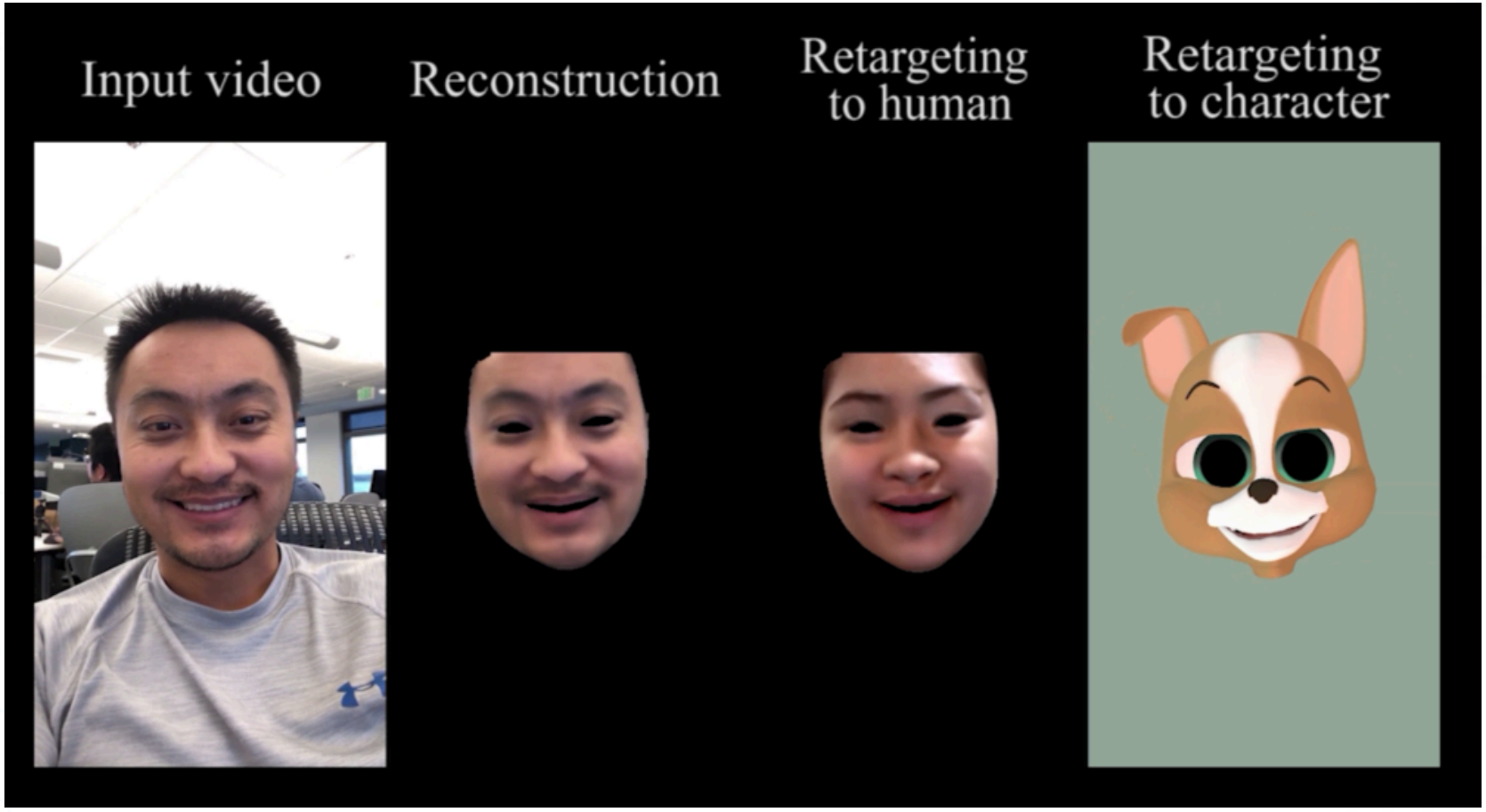
Qualitative Comparison:



Quantitative Comparison:



Retargeting Results



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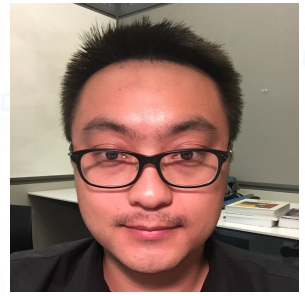
Thank you!



Project webpage: https://homes.cs.washington.edu/~bindita/personalizedfacemodeling.html