

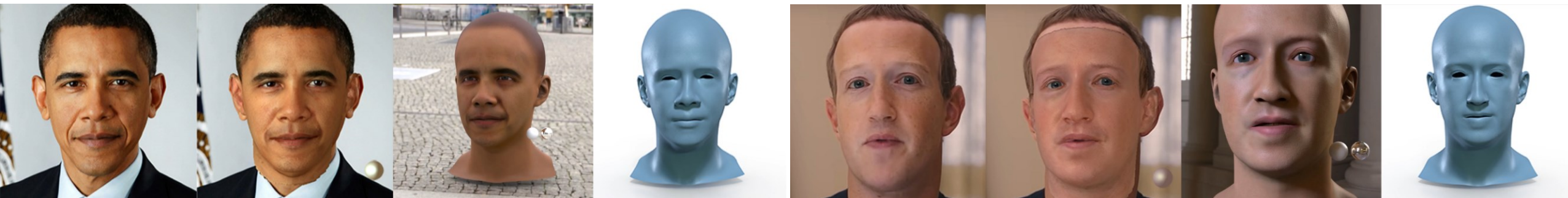


FitMe: Deep Photorealistic 3D Morphable Model Avatars

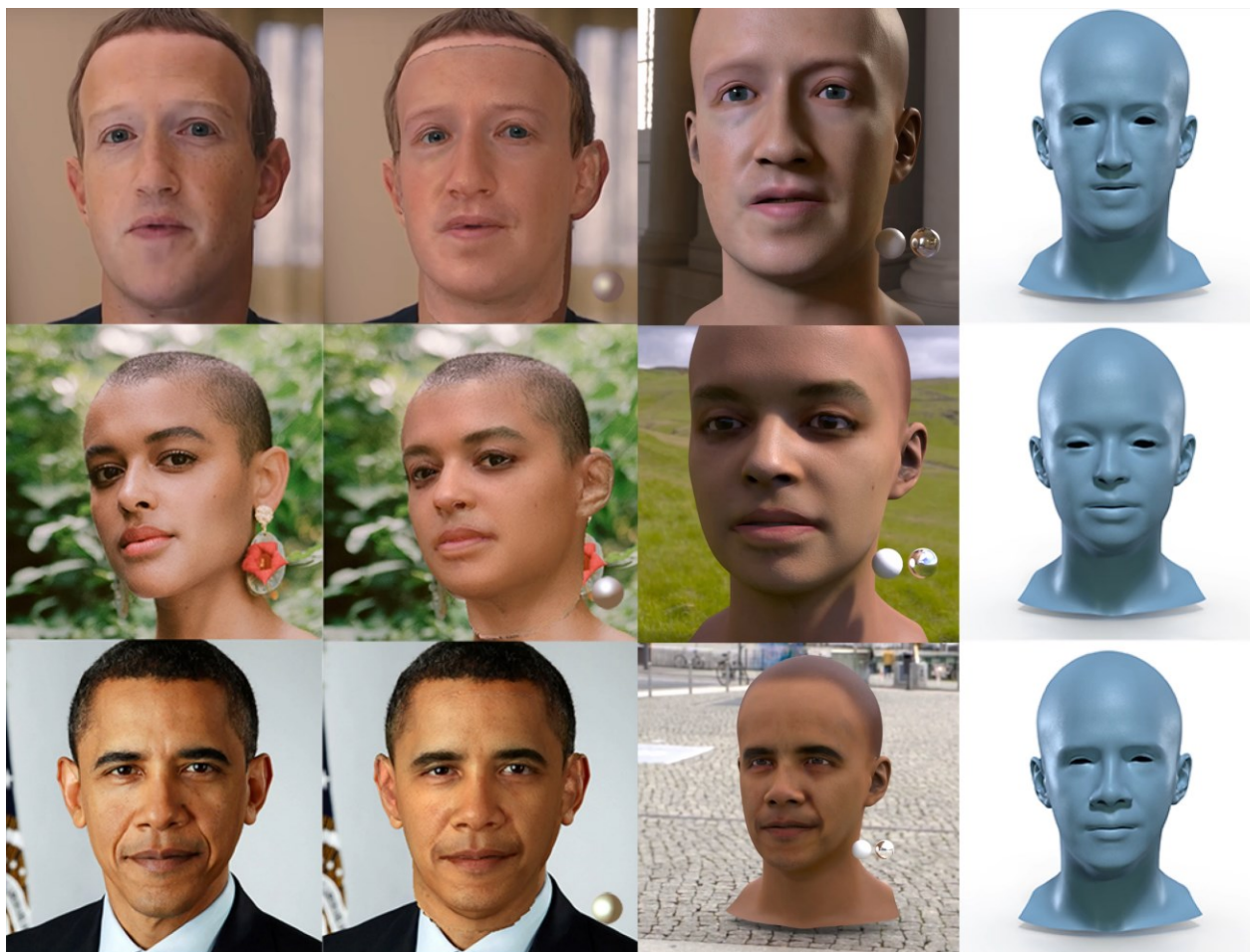
Alexandros Lattas, Stylianos Moschoglou, Stylianos Ploumpis,
Baris Gecer, Jiankang Deng, Stefanos Zafeiriou

Imperial College London

WED-AM-039



FitMe: Deep Photorealistic 3D Morphable Model Avatars



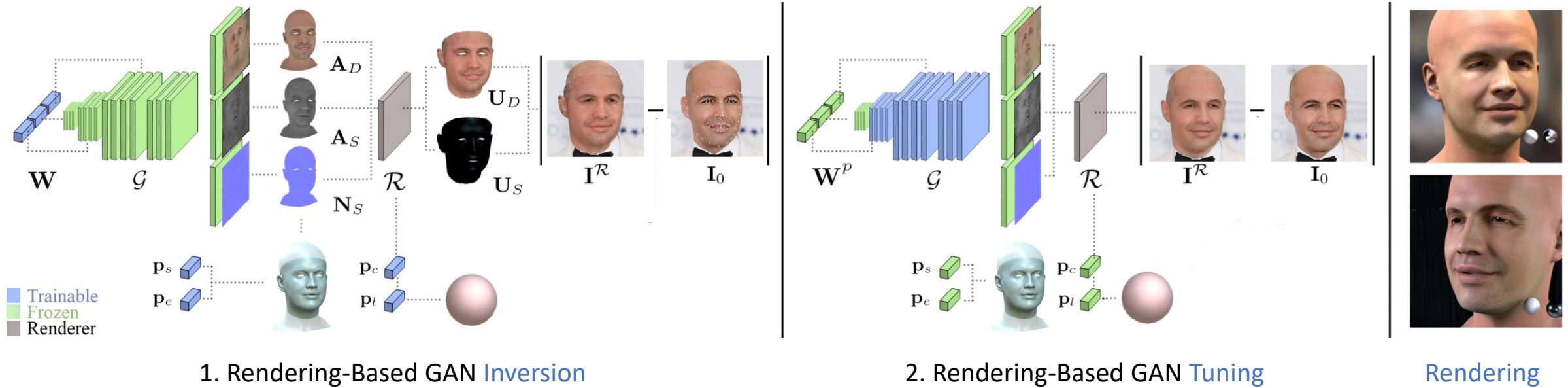
Input

Fitting Result

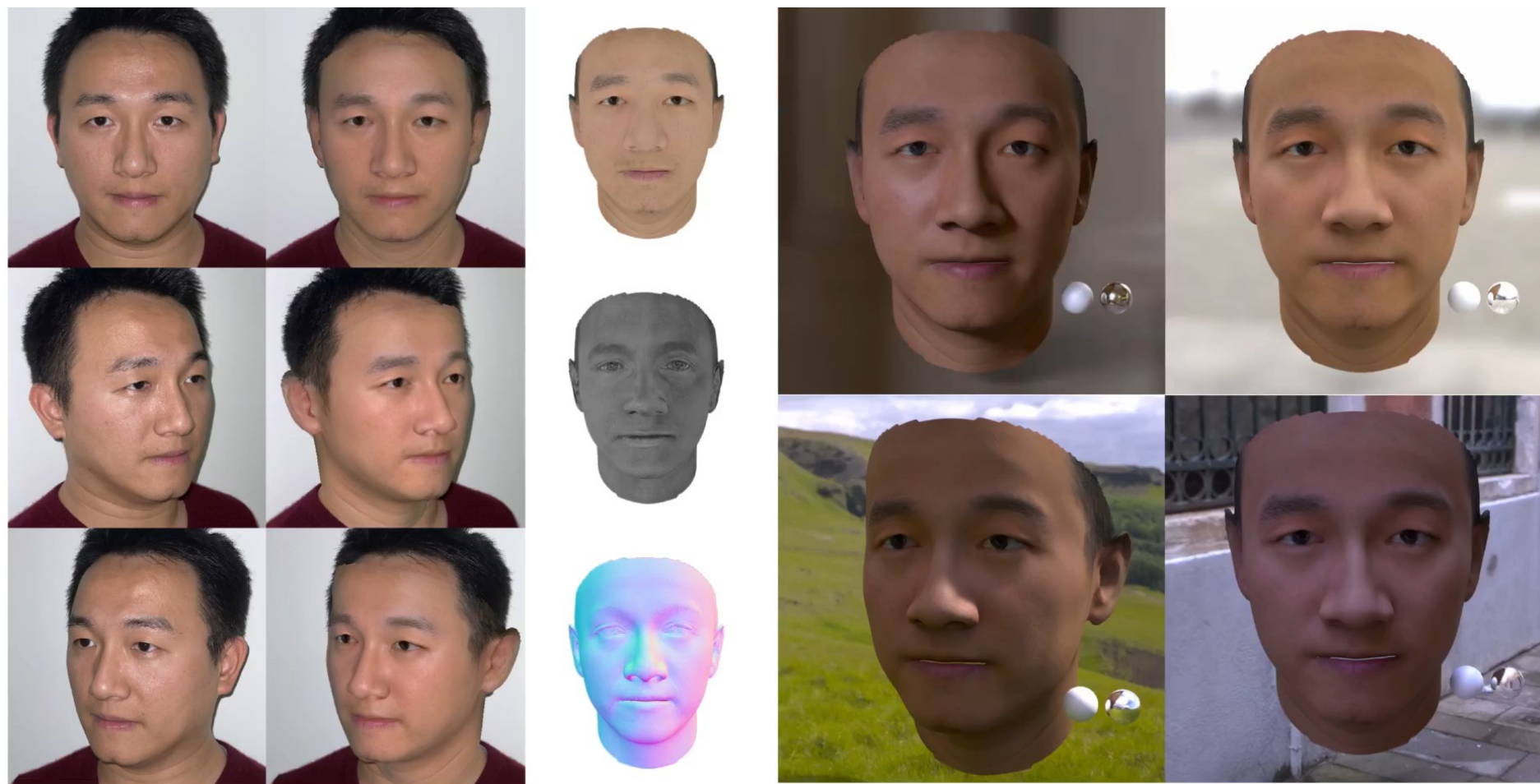
Rendering

Shape

FitMe: Deep Photorealistic 3D Morphable Model Avatars



FitMe: Deep Photorealistic 3D Morphable Model Avatars



3x Selfie Inputs

Fitting Result

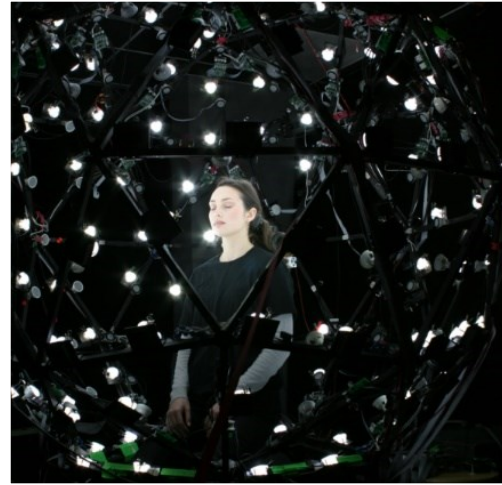
Reflectance

Photorealistic Renderings on Rendering Engine

Motivation



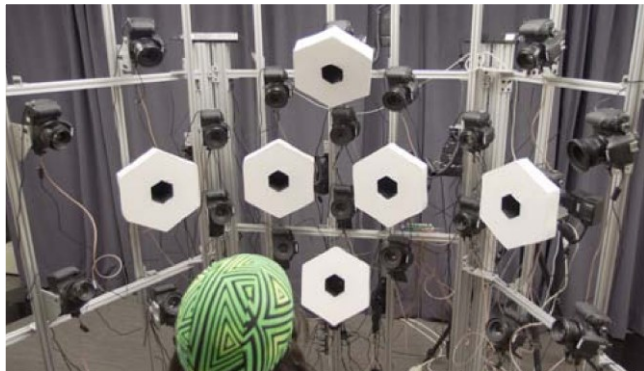
Debevec et al., SIGGRAPH 2000



Ma et al., RT 2007



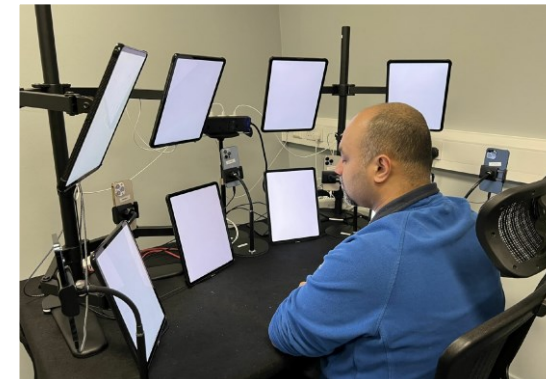
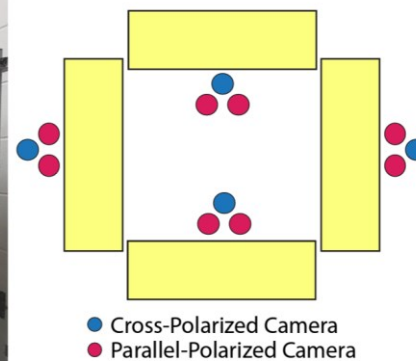
Ghosh et al., TOG 2011



Fyffe et al., CFG 2016



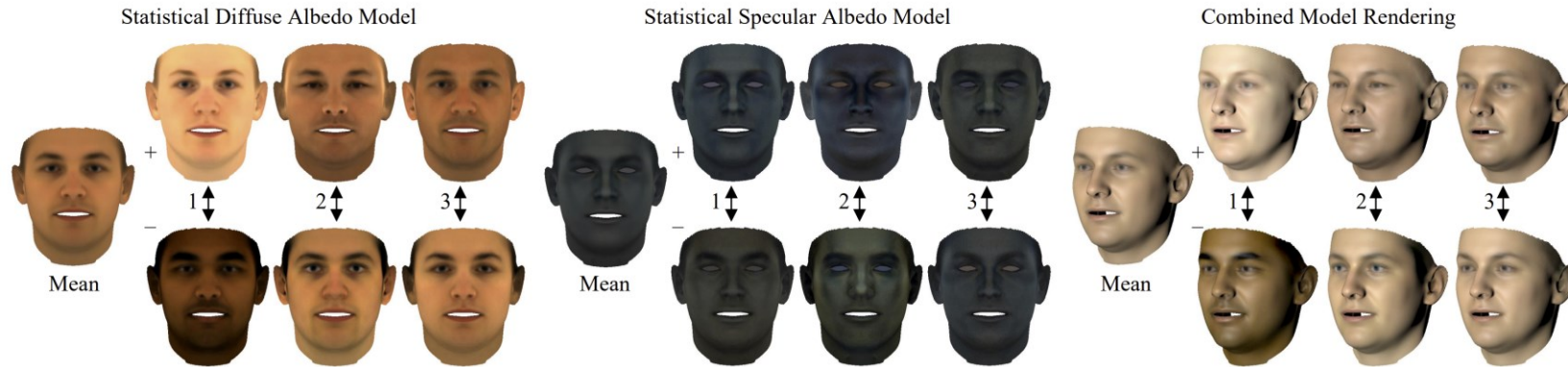
Riviere et al., TOG 2020



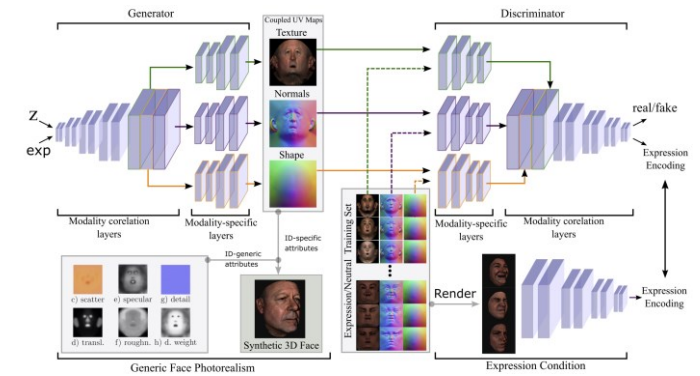
Lattas et al., ECCV 2022



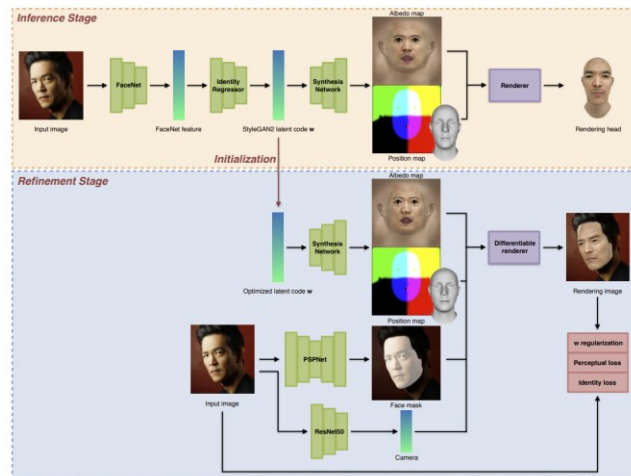
Prior Work



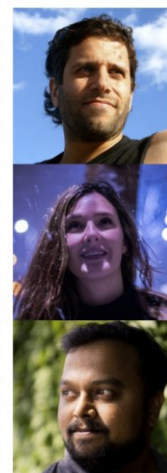
Albedo Morphable Model, Smith et al., CVPR 2020



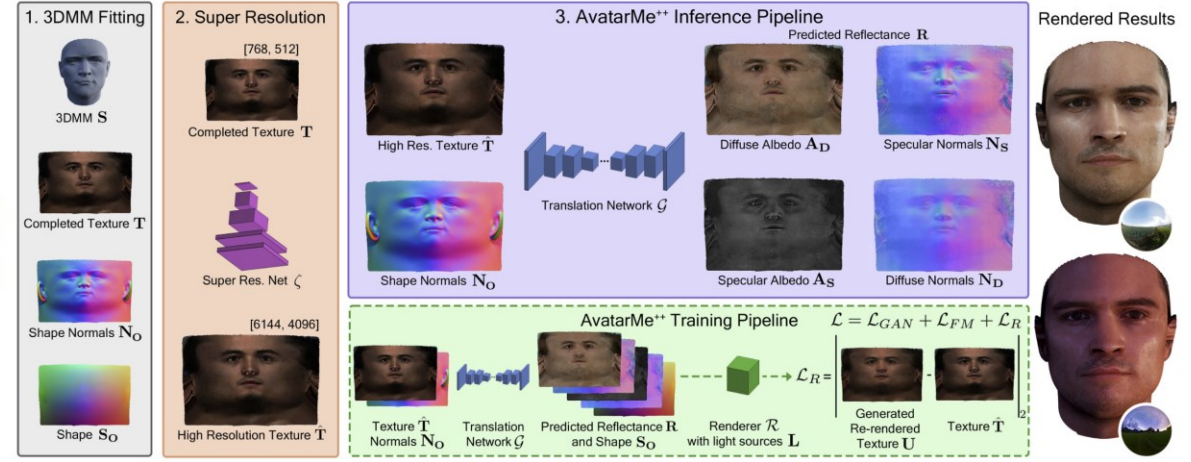
TBGAN, Gecer et al., ECCV 2020



Normalized Avatar Synthesis, Luo et al., CVPR 2021

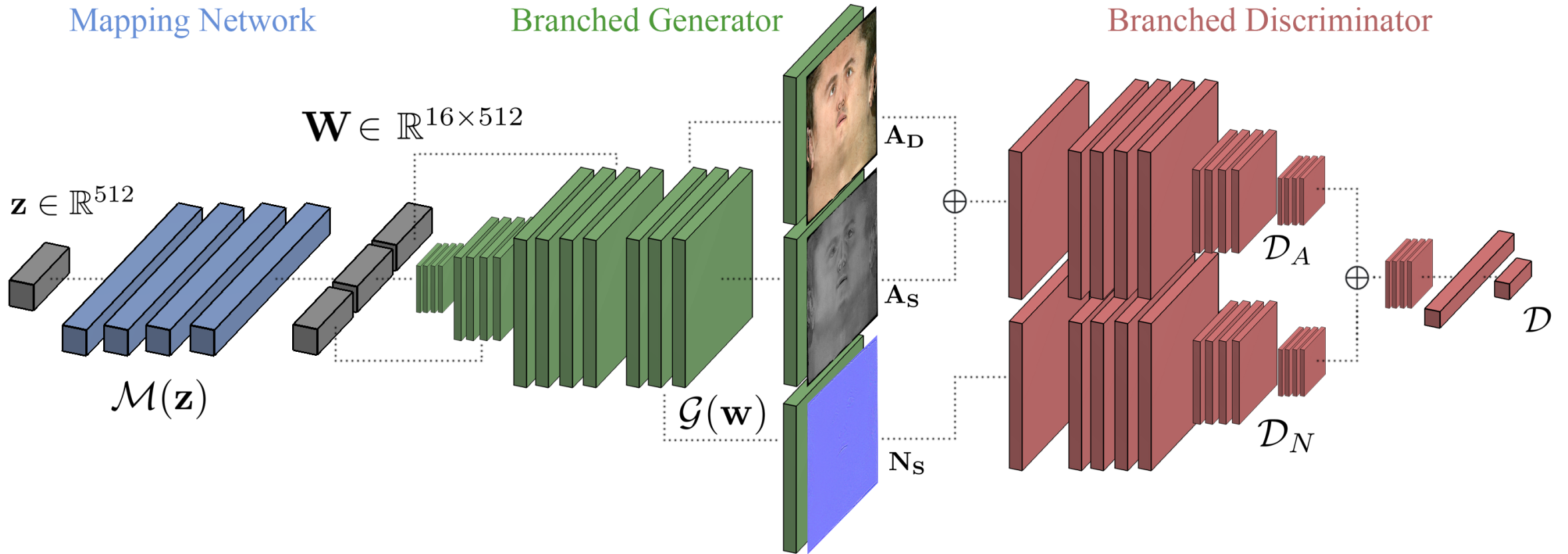


Input

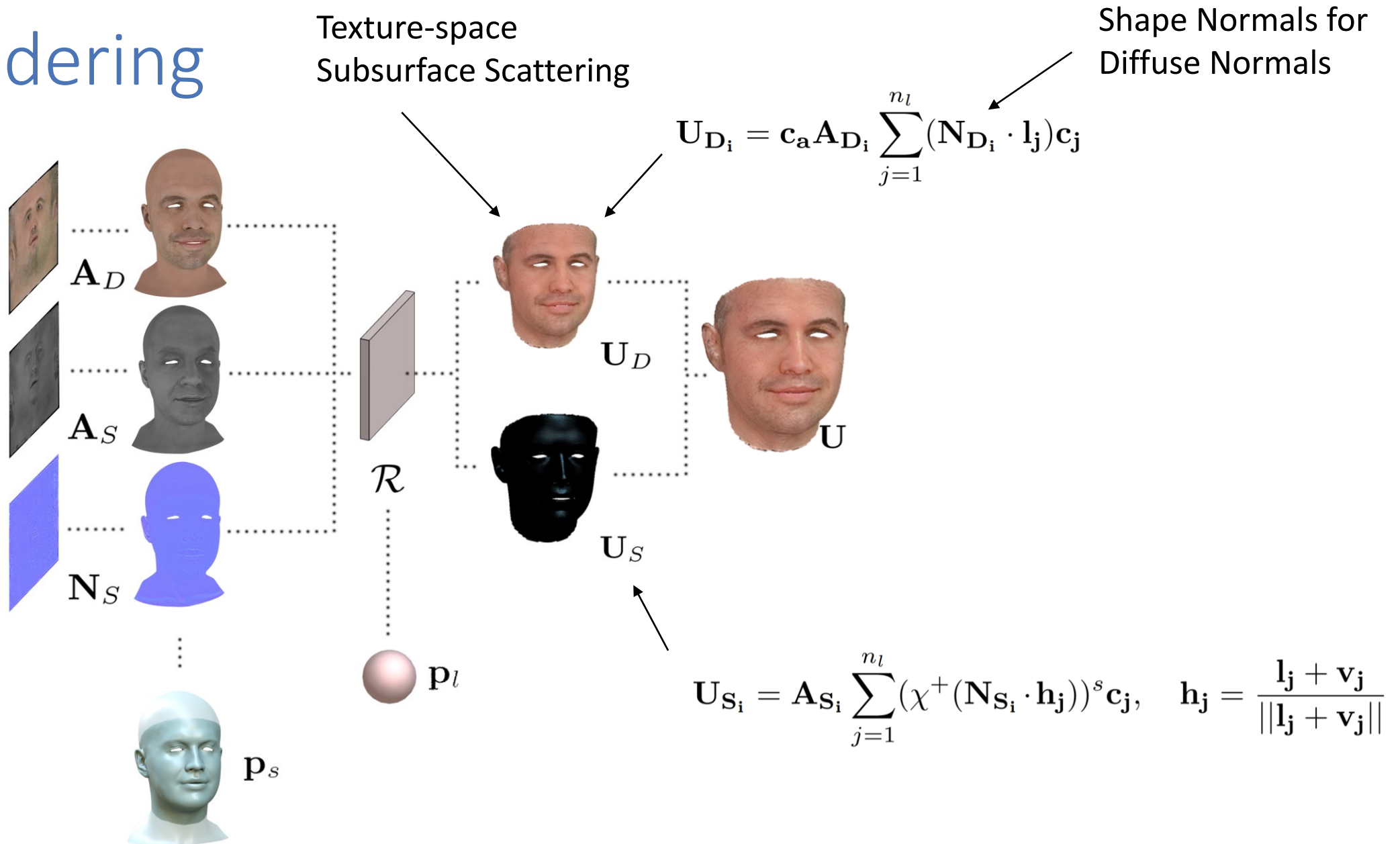


AvatarMe++, Lattas et al., TPAMI 2021

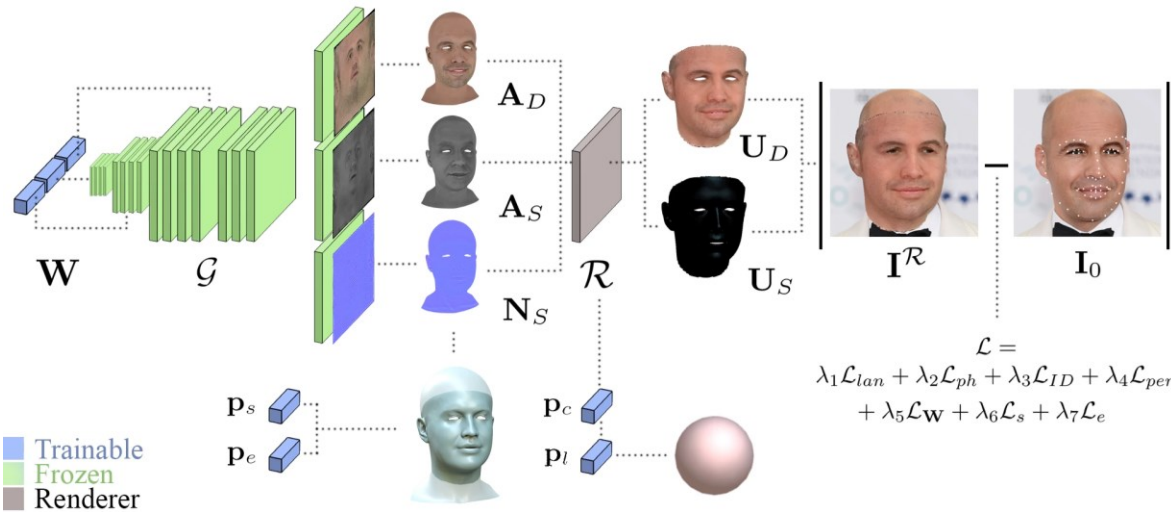
The Model - BRDF-GAN



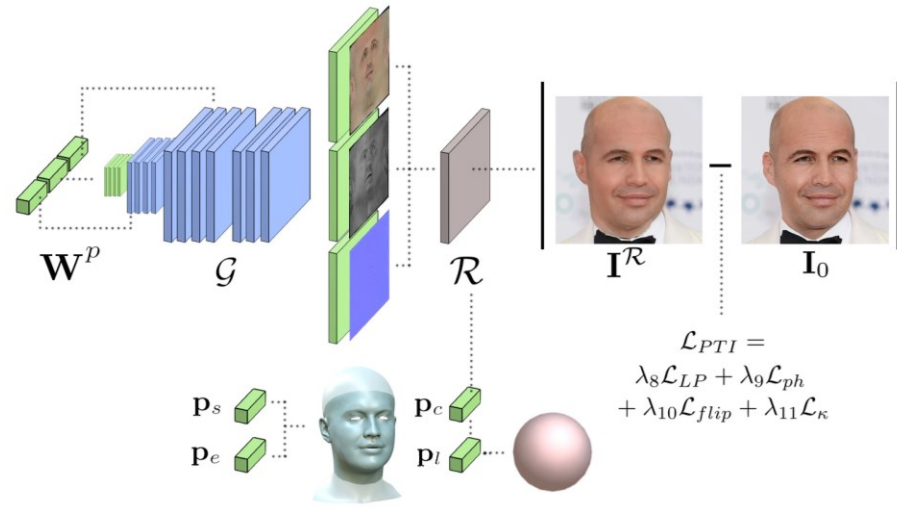
Rendering



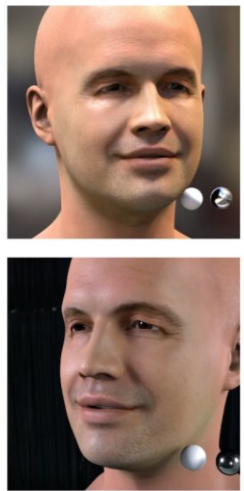
Method – Fitting



1. Rendering-Based GAN Inversion

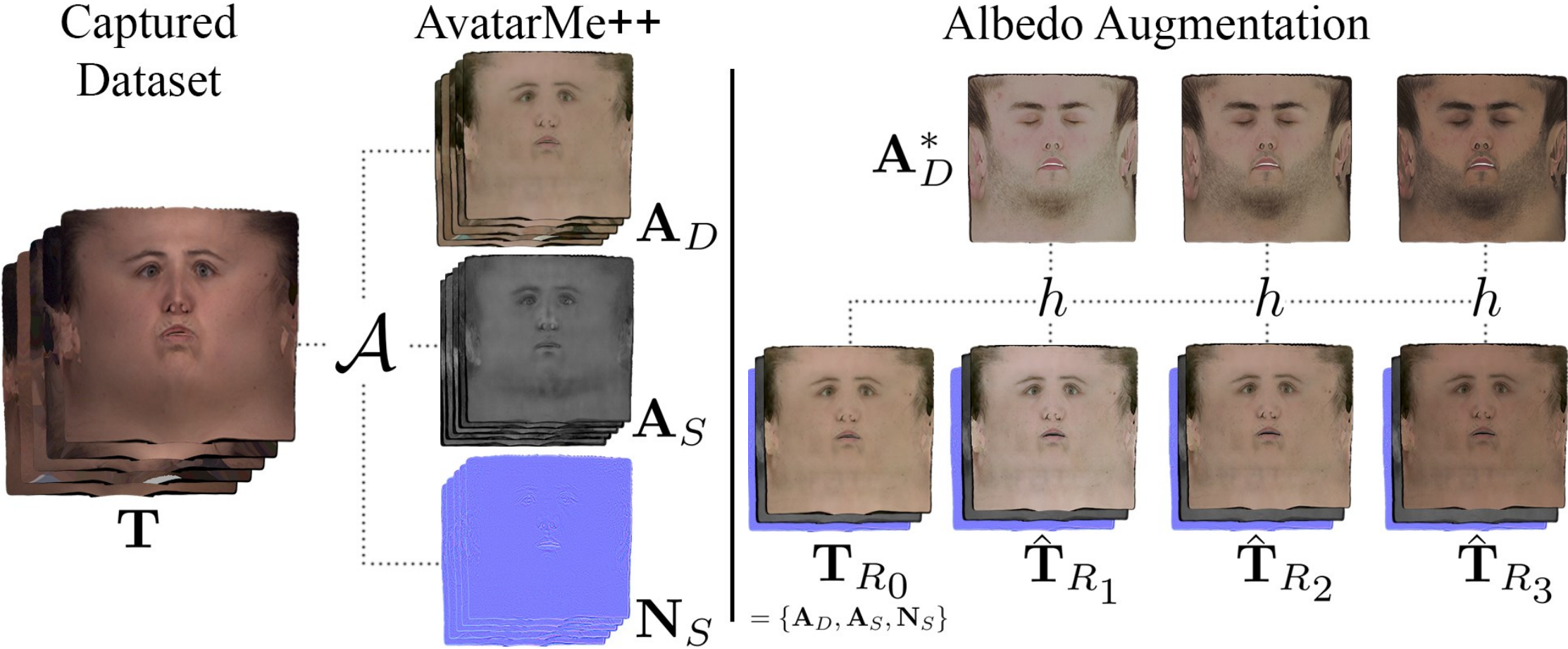


2. Rendering-Based GAN Tuning

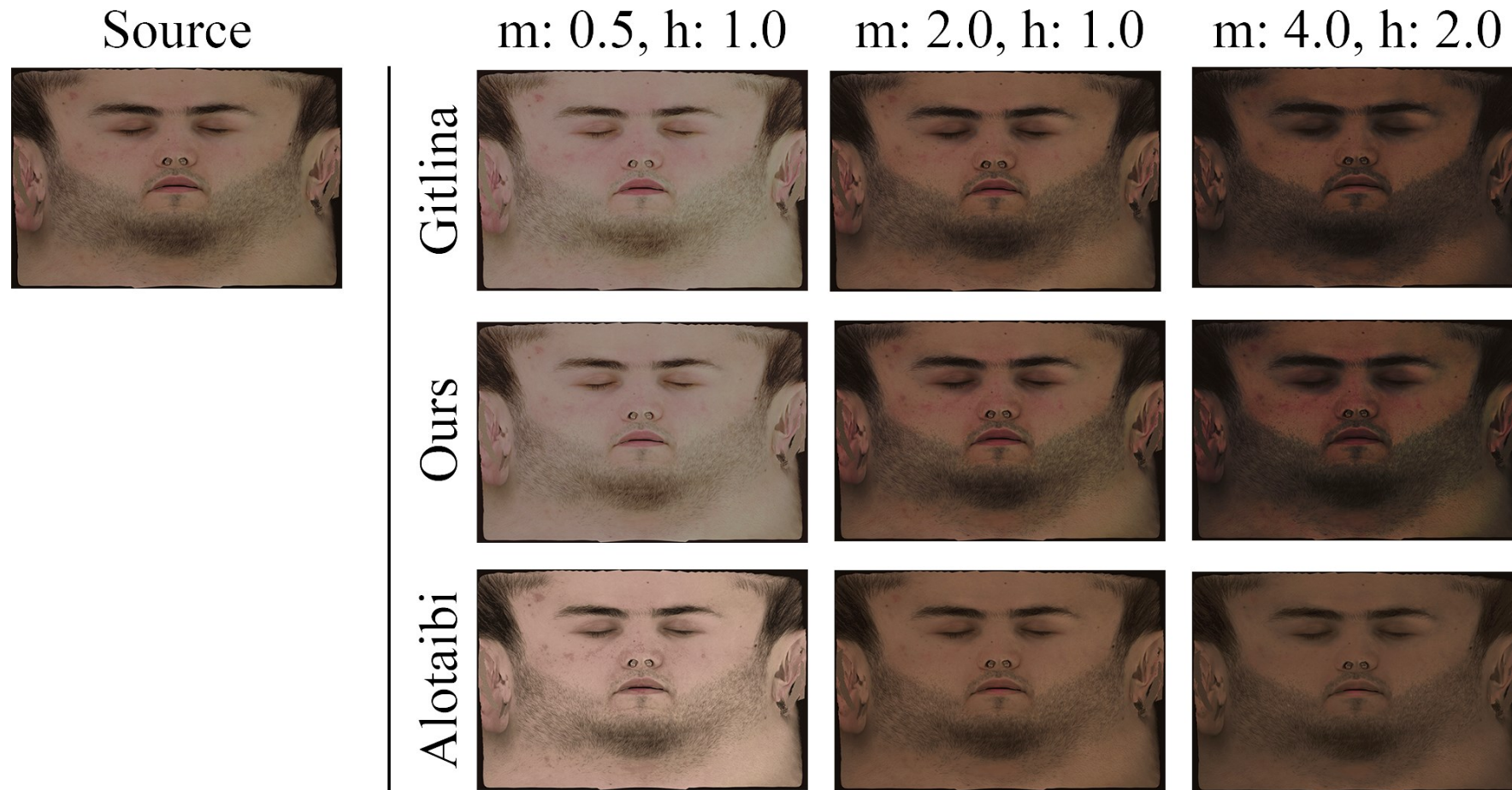


Rendering

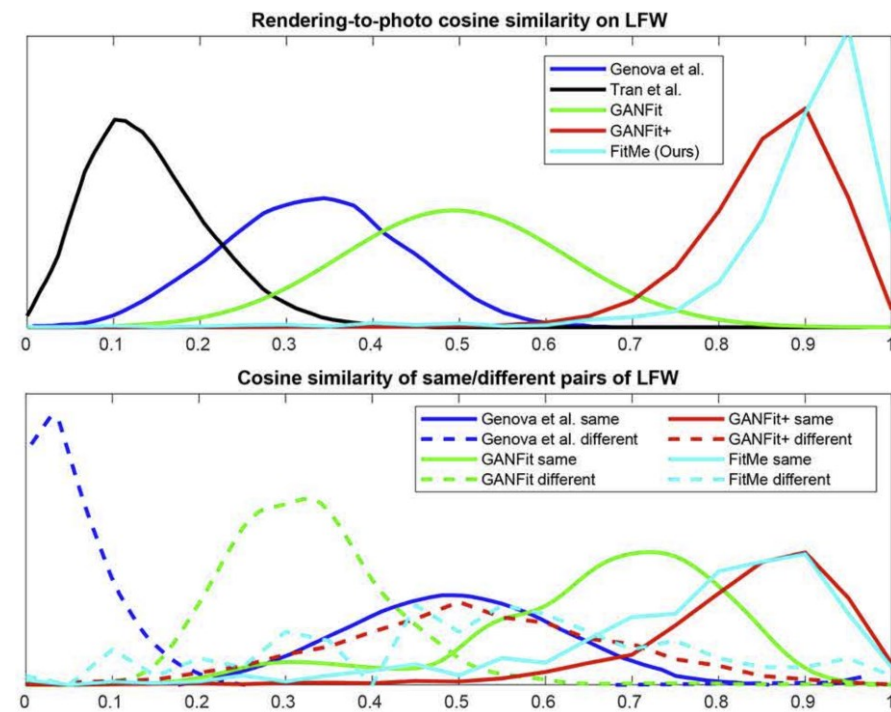
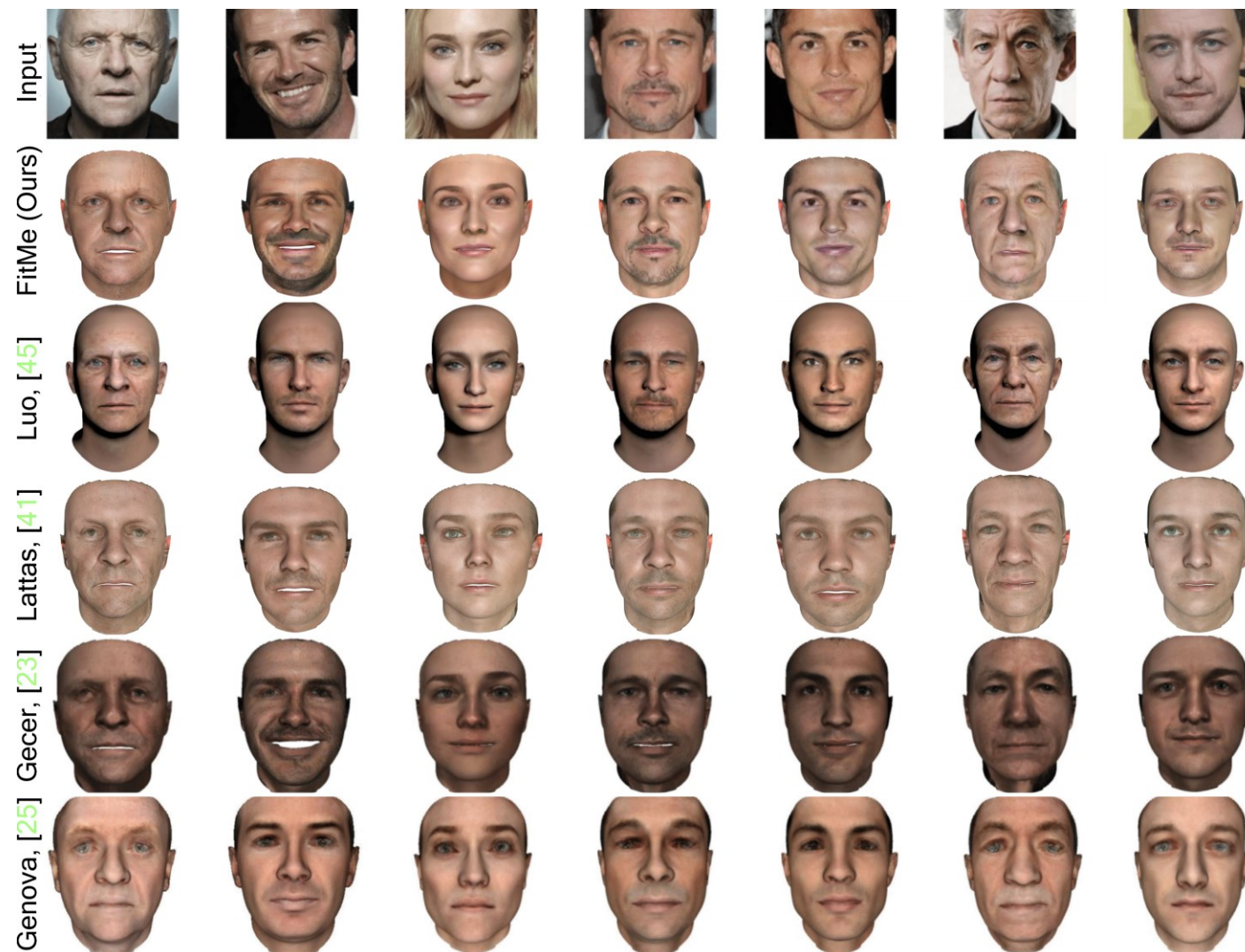
Method – Data



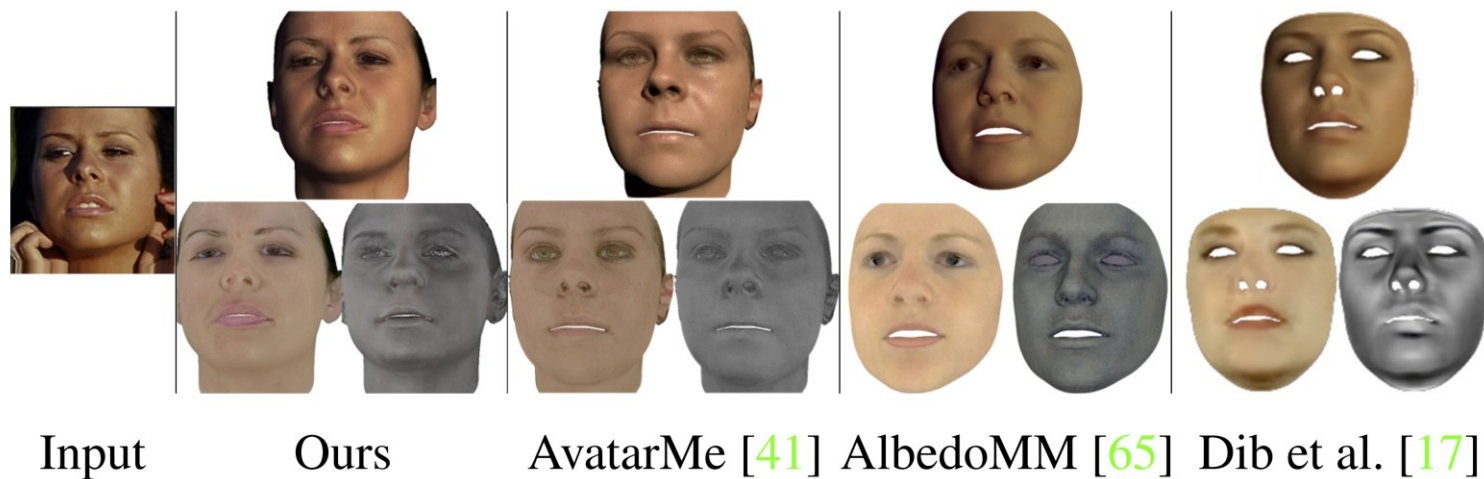
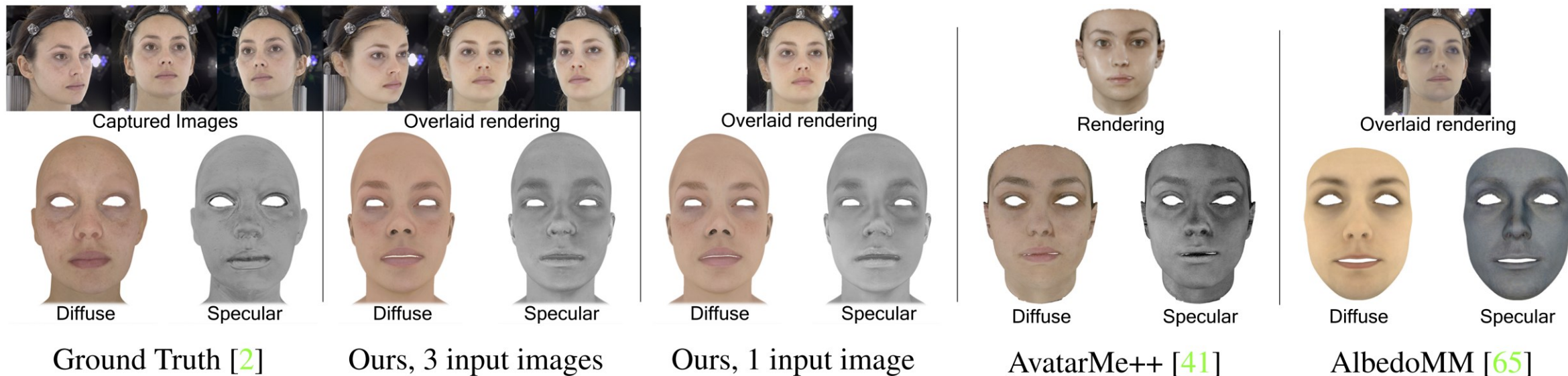
Results – Data Augmentation



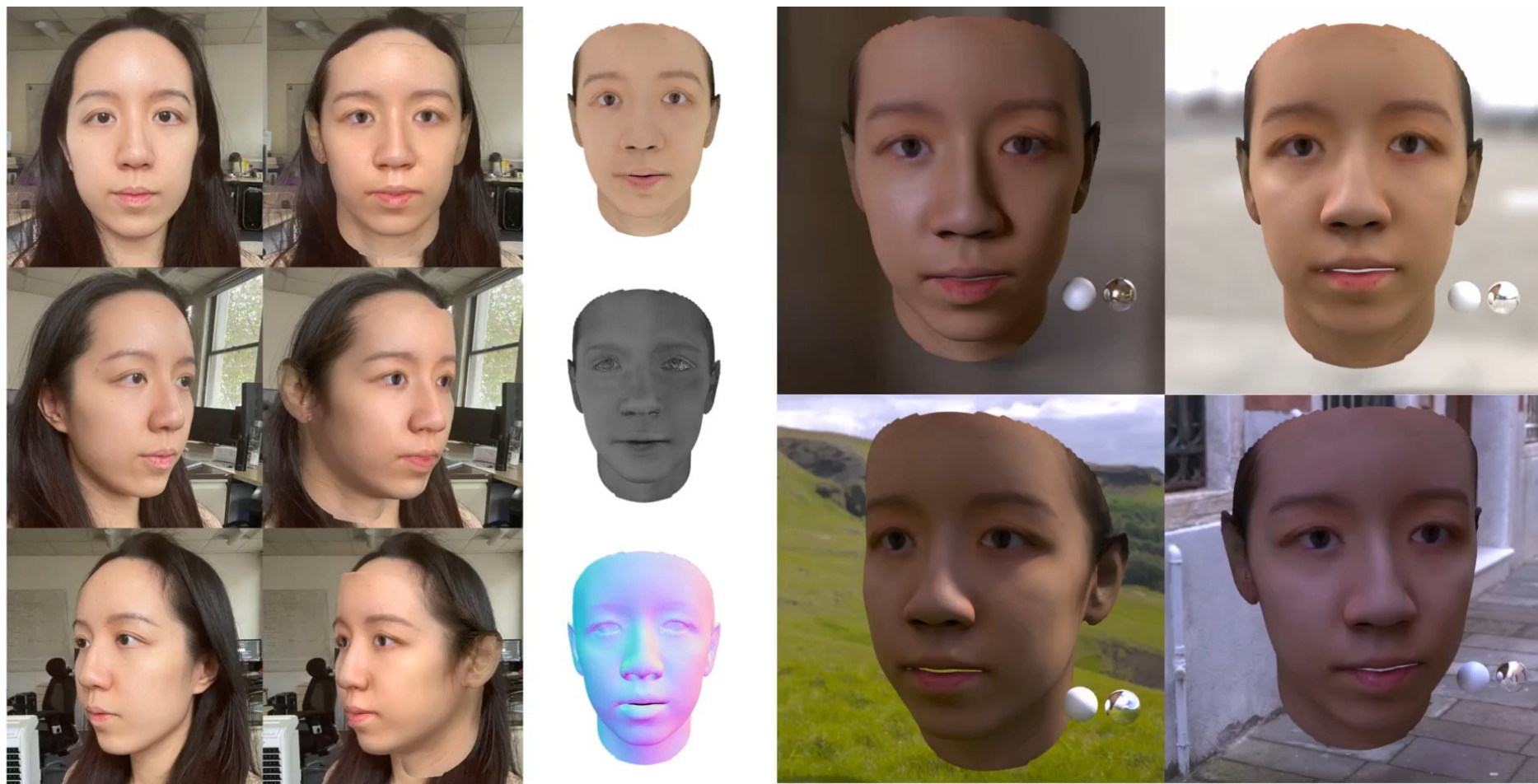
Results – Single Image Reconstruction



Results – Reflectance Acquisition



FitMe: Deep Photorealistic 3D Morphable Model Avatars



3x Selfie Inputs

Fitting Result

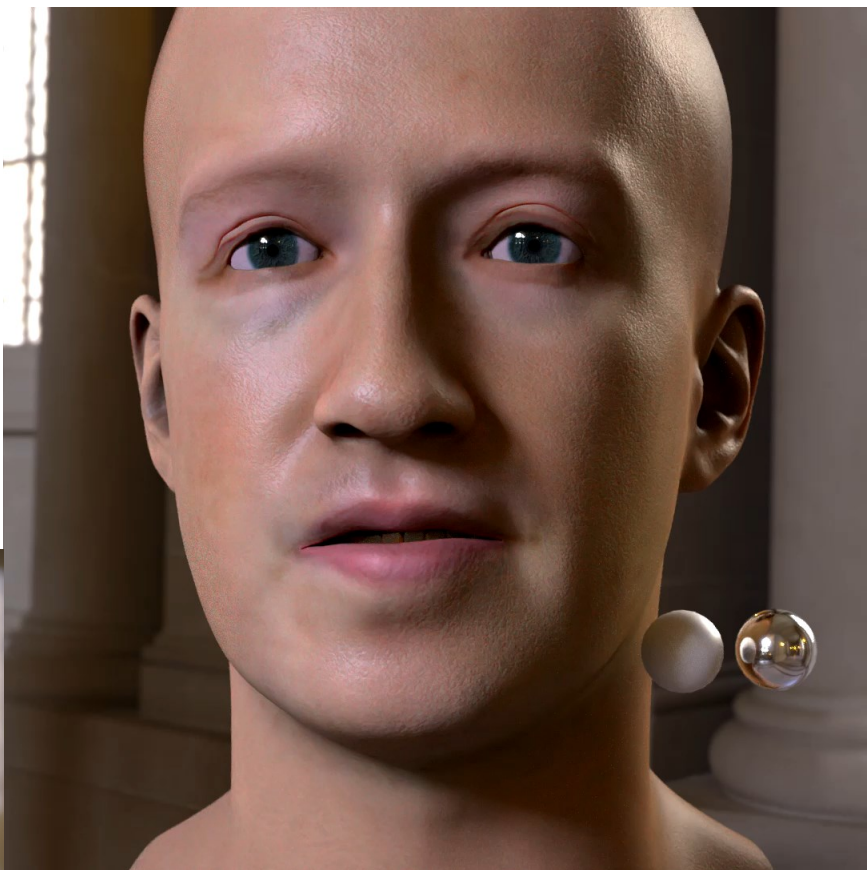
Reflectance

Photorealistic Renderings on Rendering Engine

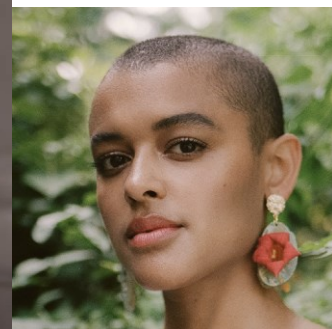
FitMe: Deep Photorealistic 3D Morphable Model Avatars



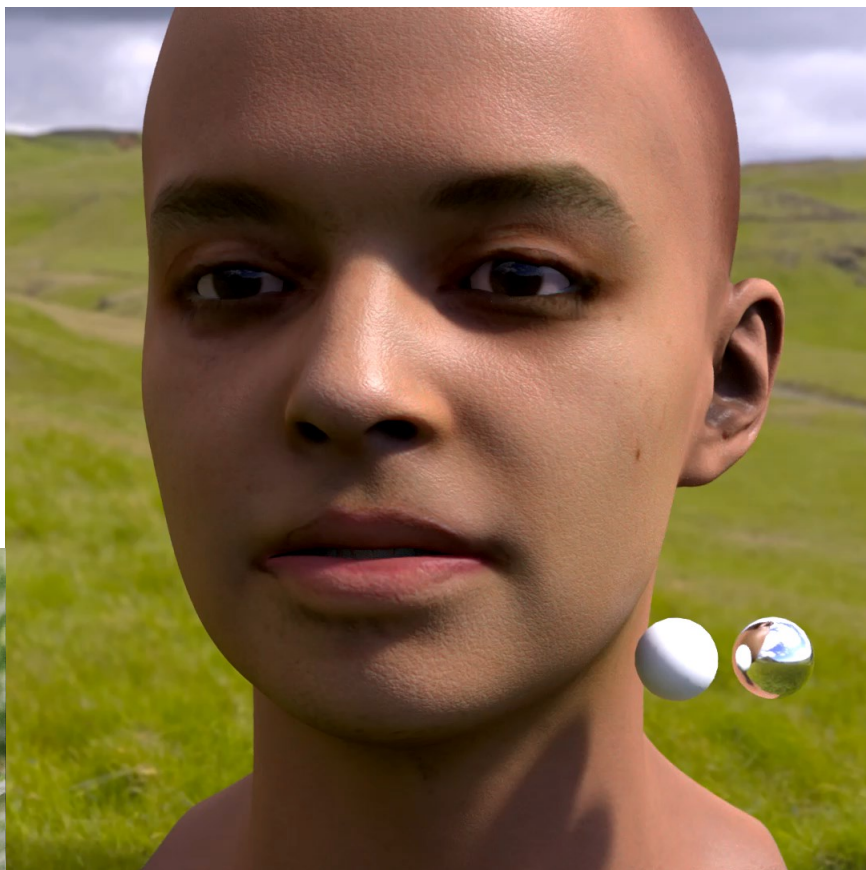
Input



Photorealistic Rendering on Rendering Engine



Input



Photorealistic Rendering on Rendering Engine

FitMe: Deep Photorealistic 3D Morphable Model Avatars



Inputs

Photorealistic Renderings on Rendering Engine

Results – Difficult Cases



Input



Result



Input



Result

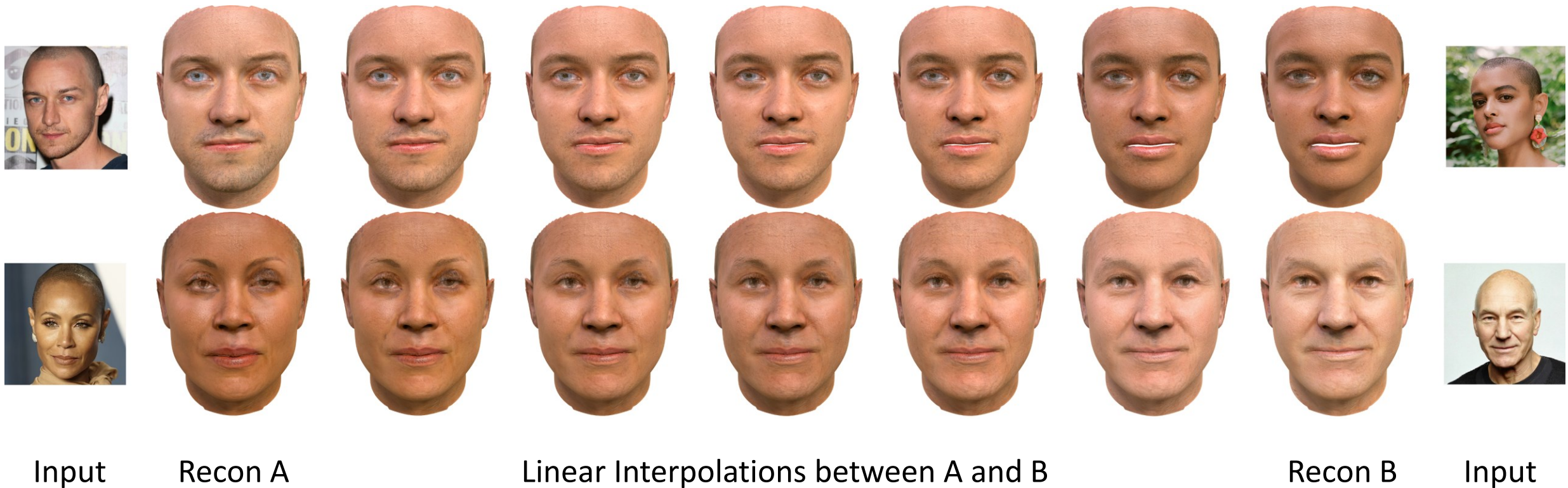


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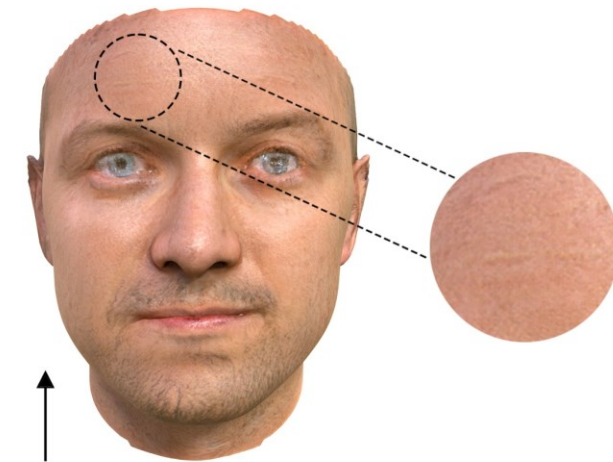
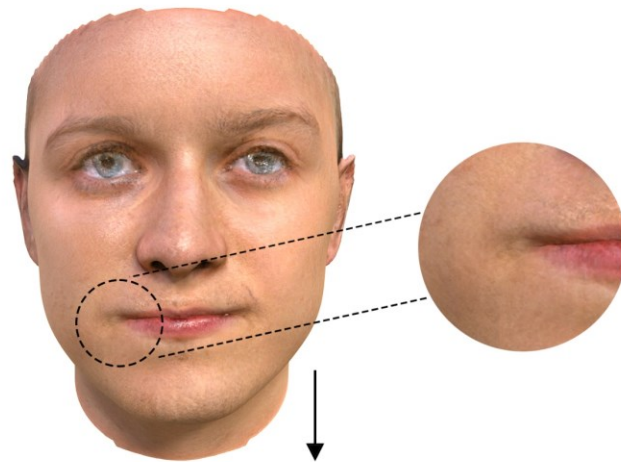
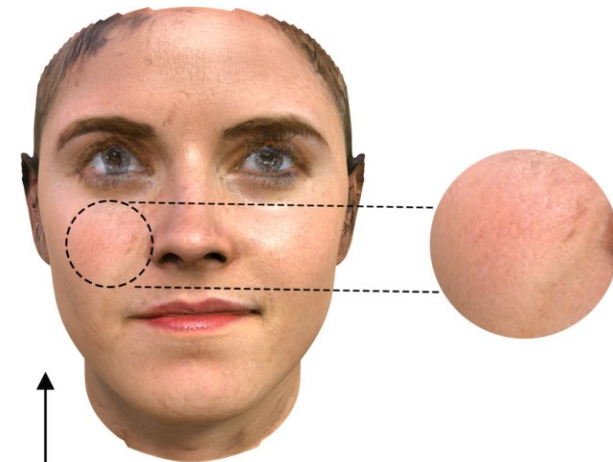
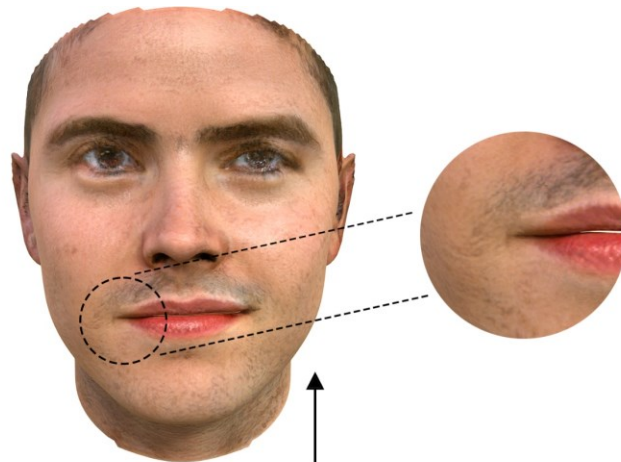


Result

Results – Model Interpolation



Results – Editing



Input

Recon.

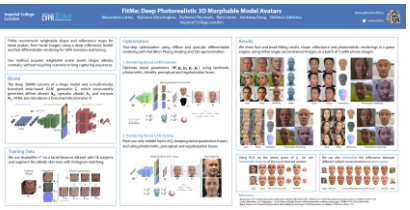
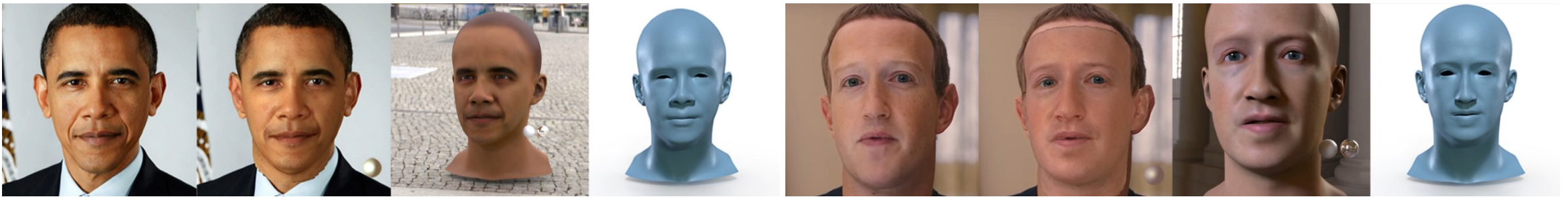
Skin-Tone

Facial Hair

Wrinkles

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CVPR: WED-AM-039

lattas.github.io/fitme