Few-Shot High-Fidelity 3D Reconstruction of Human Bodies

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Abstract

We provide a fully automated solution for the 3D reconstruction of human heads, including hair and shoulders, from a sparse collection of photos (as few as 3). Our approach yields anatomically accurate reconstructions, improving over commonly used methods based on 3D morphable models, while retaining a comparable robustness. The key technology enabling our method is a deep learning system that combines a 3D prior (shape space) pretrained from over 10K real scans, with a state-of-the art 3D reconstruction architecture based on differentiable rendering. This technology offers a promising avenue to model and reconstruct full bodies in 3D with unprecedented accuracy and flexibility, being able to capture complex shapes, e.g garments, clothing, or diverse bodies.