EgoRenderer: Rendering Human Avatars from Egocentric Camera Images

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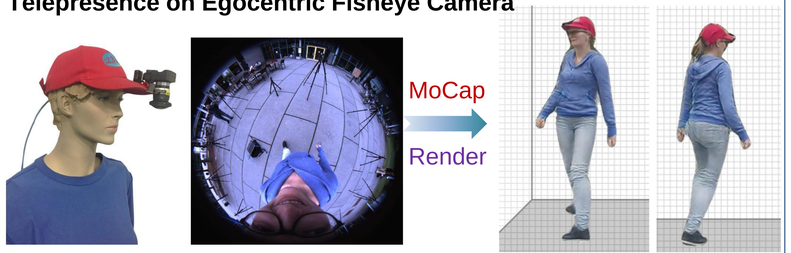
http://vcai.mpi-inf.mpg.de/projects/EgoRenderer

Introduction

Telepresence on Egocentric Fisheye Camera



We propose EgoRenderer, a mobile end-to-end telepresence system.

- Hardware setup: A wearable fisheye camera mounted on a cap or a VR headset.
- Input: Real-time captured egocentric sequences.
- Output: Free-viewpoint full-body avatars.

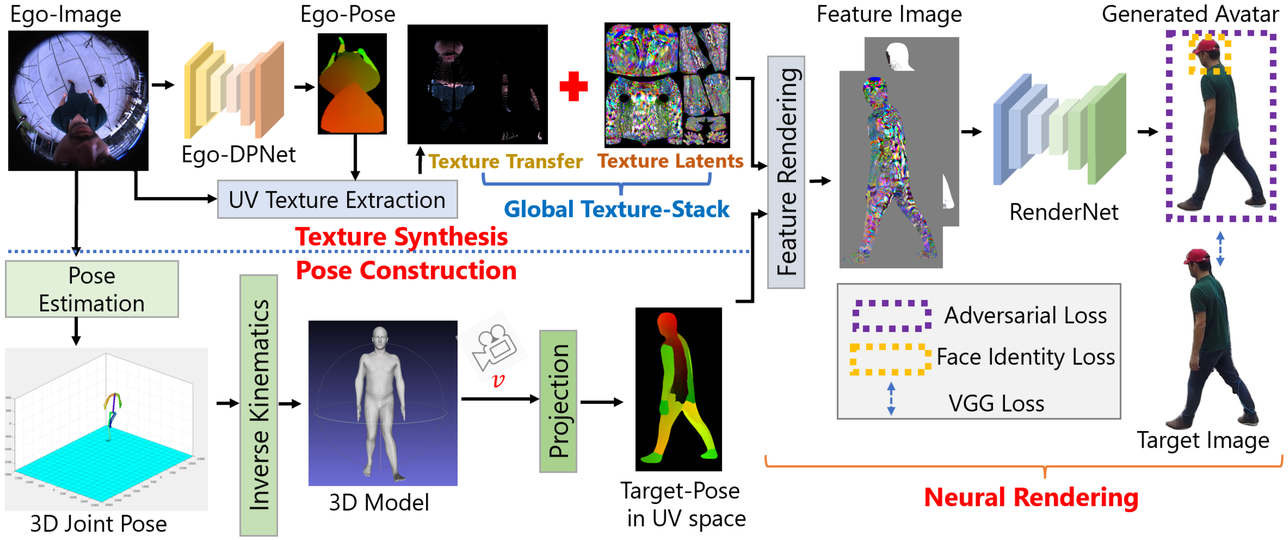
EgoRenderer: A Mobile Telepresence System

Pipeline:

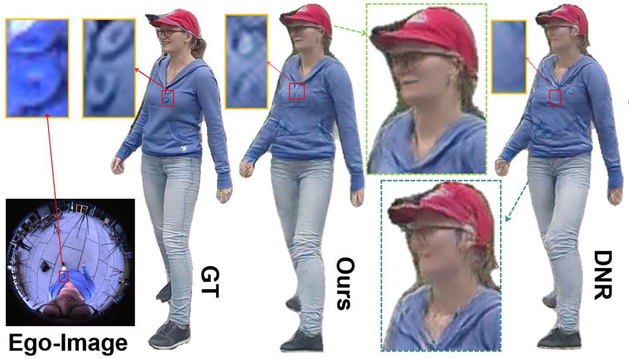
- Texture Synthesis by real-time egocentric texture transfer and implicit texture learning
- Pose Construction
- Neural Rendering

Challenges of the egocentric setup:

- Large distortions, top-down view, and self-occlusions of egocentric images
- Lack of ground truth for real egocentric images

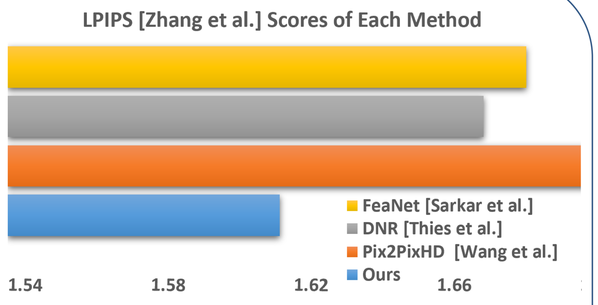


Experiments & Results



Compared with DNR, the texture transfer of Ego-Img leads to improvements in visible regions in the Ego-Image (e.g., face, neck and collar) and we even restore the tiny buttons.

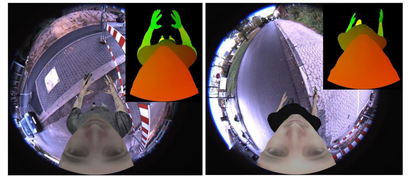
Our method, based on dynamic and implicit textures, can generate time- and pose-dependent appearances



Compared with existing methods, our method synthesize avatars with smaller LPIPS

Contributions

- A large synthetic training dataset of egocentric fisheye images, and an Ego-DPNet network to predict dense correspondence.



- An end-to-end mobile telepresence system that takes single egocentric images as input and generates free-viewpoint full-body avatars for egocentric setup.