Although the progress of generative models enables the stylization of a portrait image, obtaining the styled image in canonical (frontal) view is still a challenging task. Applying the existing methods sequentially (Stylization → Frontalization or vice versa) shows degenerated results due to domain gap and re-invert operation. Many stylization (e.g., toonifying) methods are based on StyleGAN.

Therefore, we started with the following question: How can we find the frontal mapping automatically which is done in StyleGAN’s latent space instead of pixel space? We utilized the idea of ‘swapped generator’ [3] for stylization. Our model can provide canonical information to edit based techniques! Instead of in pixel space.

Motivation

• StyleGAN-based editing methods can control the pose of image implicitly by finding pose-related directions, but they can’t operate accurate mapping for frontalizing automatically (Need some continuous adjustments to find frontal image!)

• Among them, InterfaceGAN [1] can obtain canonical pose by using a semantic hyperplane, but it requires 3D supervision for binary classification in order to calculate the hyperplane.

• Thanks to the notable successes in 3D-aware GANs (also in CVPR'22!) that can be trained without 3D label, we utilized [2] for the proposed latent mapper to learn frontal mapping.

• We utilized the idea of ‘swapped generator’ [3] for stylization. Our method is compatible with a number of StyleGAN-based techniques, thus it enables users to stylize or edit the frontalized image.