
# PML&DL Project Proposal

## 🤖Neural Face Editor (NFE)🎨

### Team

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## Project Idea

NFE is software that allows anyone to edit their photos using Deep Learning to change facial attributes such as gender, age, pose, hair colour, etc.

The project is mainly inspired by works on interpreting the latent space of GANs for people face generation [1] and other methods of manipulating GAN output [2]. It leverages techniques mentioned in the papers to edit real users' photos, change multiple image features, and preserve the general image content. These features for editing would probably include not only age, gender and pose, but also hair colour, skin colour, etc., which are not explored in the previous works. Possible work might also include styling an image (anime, for example).

Data needed for the project includes datasets with faces and annotated facial features, such as CelebA [3] and MAAD-face [4], as well as datasets with styled faces that are yet to be explored. Such data will be used for interpreting various features' latent space and training SVM (or another appropriate classifier) to

separate different classes. The project also requires well-trained GANs such as PGGAN and StyleGAN to use for image generation (using latent space transformations).
Expected project output is software in a form of a runnable program and/or console application that allows users to download their photos and select facial features for editing. The program also includes a manual (pdf or integrated inside interface) showcasing available manipulations. The output of a single manipulation would be several images for the user to cherry-pick the best one with no artifacts.

## References


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3. Liu, Z., Luo, P., Wang, X., & Tang, X. (2015). Deep learning face attributes in the wild. In *Proceedings of the IEEE international conference on computer vision* (pp. 3730-3738).
4. Terhörst, P., Fährmann, D., Kolf, J. N., Damer, N., Kirchbuchner, F., & Kuijper, A. (2021). MAAD-Face: a massively annotated attribute dataset for face images. *IEEE Transactions on Information Forensics and Security*, *16,* 3942-3957.