

## Facial Landmark Detection with Synthetic Data

Detecting facial landmarks on videos, by leveraging a synthetic dataset of rendered 3D faces

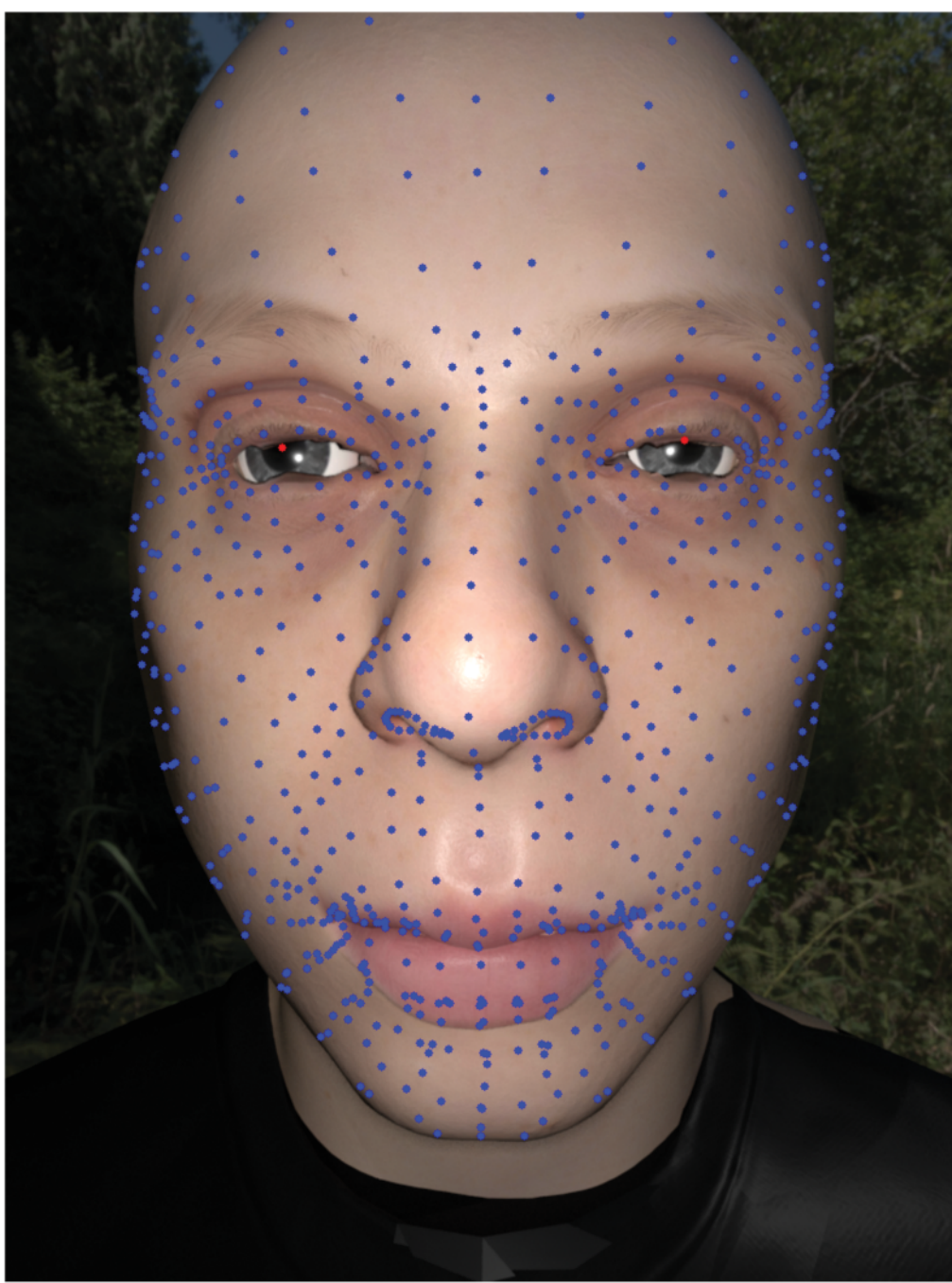
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### PROJECT SUMMARY

Facial Landmark detection is a computer vision problem, where the goal is to predict the location of 2d points on an image, corresponding to semantic features of the face (e.g. points around the eyes, mouth and nose). Commonly treated as a machine learning task, it relies on an annotated dataset: pairs of images and 2d points. Gathering enough real data for training can be resource-intensive. A cost-effective alternative is creating synthetic datasets using face scans. Recent work has shown the potential for using synthetic data for this task in an in-the-wild setting (un-controlled environments). Unfortunately, models trained on in-the-wild data do not generalize well face images captured in HMCs (helmet mounted cameras), commonly used to capture actor's performances for films and video games. This research aims to bridge this gap, by developing synthetic data that resembles HMC footage, and training Facial Landmark Detectors on this data.

### REFERENCES

1. Wood, Erroll, et al. "Fake it till you make it: face analysis in the wild using synthetic data alone." Proceedings of the IEEE/CVF international conference on computer vision. 2021.
2. Wood, Erroll, et al. "3d face reconstruction with dense landmarks." European Conference on Computer Vision. Cham: Springer Nature Switzerland, 2022.
3. Xia, Jiahao, et al. "Sparse local patch transformer for robust face alignment and landmarks inherent relation learning." Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition. 2022.

