

Facial Keypoint Detection

REVIEW

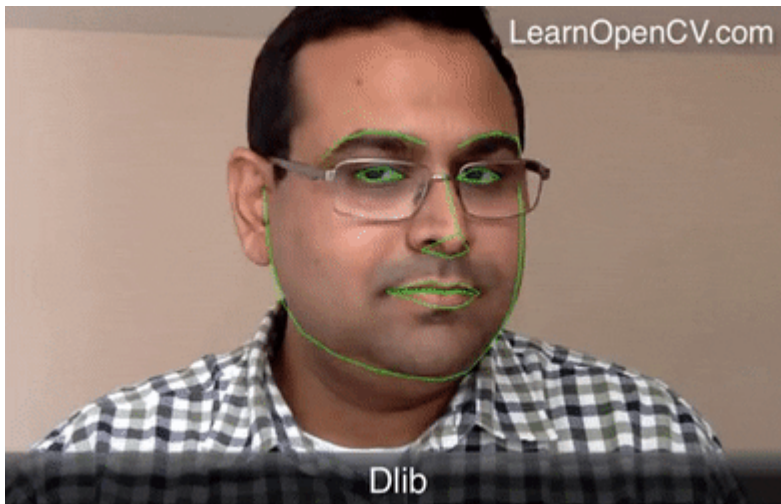
CODE REVIEW 1

HISTORY

Meets Specifications

You've done a fantastic job completing the Facial Keypoints Detection project. The final predictions look great. I appreciate your effort in experimenting and making informed decisions (instead of simply following an online resource or a research paper) regarding different loss functions, optimizers, architectures, etc. This is a very desirable trait since you'd have to do the same while working on real-world or new projects. 😊

Facial Keypoints Detection is a well-known [machine learning challenge](#). If you want to improve this very model to allow it to work well in extreme conditions like bad lighting, bad head orientation (add appropriate PyTorch transformations like `ColorJitter`, `HorizontalFlip`, `Rotation` and more - see [this post](#) for more details), etc., the best thing you can do is to simply follow [NaimishNet](#) implementation details with some tweaks (optimizer, learning rate, batch size, etc) as per the latest improvements and your machine requirements. But for production-level performance, you can always use pre-trained models for better performance, say [Dlib library](#) provides real-time facial landmarks seamlessly. You can find a [tutorial here](#). Here is an example:



Note: Predicted keypoints are joined with lines here.

Here are some advanced research works involving facial landmarks:

- [Style Aggregated Network for Facial Landmark Detection \(Code\)](#)
- [Supervision-by-Registration: An Unsupervised Approach to Improve the Precision of Facial Landmark Detectors \(Code\)](#)
- [Teacher Supervises Students How to Learn From Partially Labeled Images for Facial Landmark Detection \(Code\)](#)
- [A Fast Keypoint Based Hybrid Method for Copy Move Forgery Detection](#)
- [Disguised Face Identification \(DFI\) with Facial KeyPoints using Spatial Fusion Convolutional Network](#)
- [Berkeley team's attempt at beating the Facial Keypoints Detection Kaggle competition](#)
- [Facial Keypoints Detection using the Inception model](#)

Facial keypoint prediction pipeline can be extended to human poses, hand poses and more to help intelligent systems like robots, automatic anomaly detectors understand the orientation of subjects in CCTV footage, etc. Here are some works based on keypoint prediction:

- [OpenPose: Realtime Multi-Person 2D Pose Estimation using Part Affinity Fields \(Code\)](#)
- [PoseFix: Model-agnostic General Human Pose Refinement Network \(Code\)](#)
- [SRN: Stacked Regression Network for Real-time 3D Hand Pose Estimation \(Code\)](#)
- [Hand Pose Estimation: A Survey](#)

Keep up the good work and good luck with the rest of the nanodegree! 😊👍

Files Submitted
