

Title: Head pose and eye blink mouse control system

Goal: detect head pose yaw, pitch angles to control the mouse cursor and eye blinking to do the clicks.

OS: Windows and linux

IDE: Visual Studio Code

Language: Python

Device: i7-7700HQ CPU and GTX 950M laptop graphics card

Camera: Webcam

OpenCV version: 4.9.0.80

Test data: from the camera

References:

- Face Alignment Across Large Poses: A 3D Solution
- Face and Eye Detection by CNN Algorithms
- Touchless Head-Control (THC): Head Gesture Recognition for Cursor and Orientation Control

Code

- 3DDFA_V2 - https://github.com/cleardusk/3DDFA_V2
- MRL dataset
 - <http://mrl.cs.vsb.cz/eyedataset>
 - <https://www.kaggle.com/datasets/imadeddinedjerarda/mrl-eye-dataset>
- TensorFlow CNN and Image classification
 - <https://www.tensorflow.org/tutorials/images/cnn>
 - <https://www.tensorflow.org/tutorials/images/classification>
 - <https://www.kaggle.com/code/kanncaa1/convolutional-neural-network-cnn-tutorial>
 - <https://www.kaggle.com/code/anandhuh/image-classification-using-cnn-for-beginners>