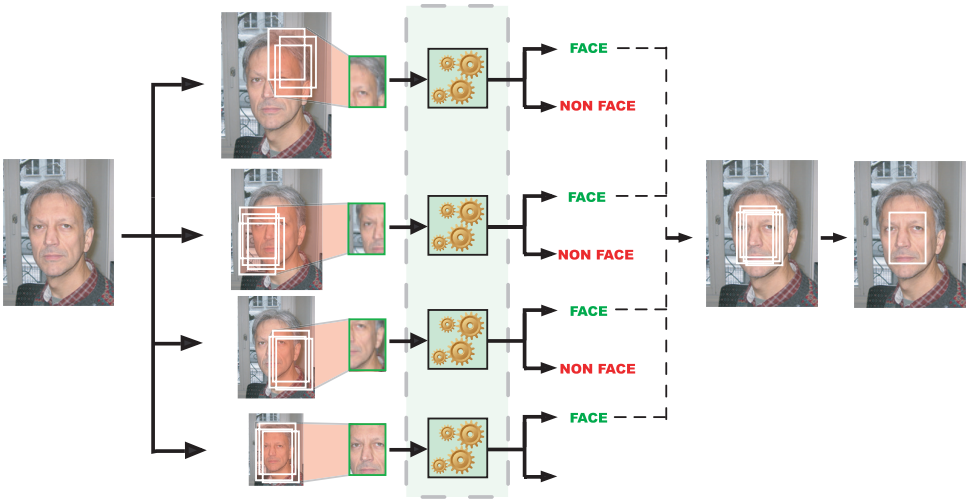
Face Tracker

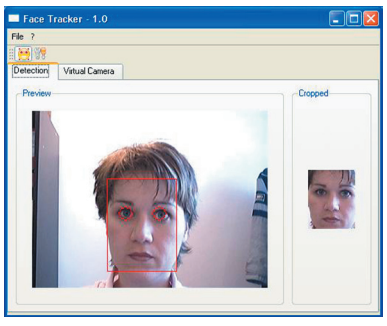
Detection and recognition of people using the face is a challenging problem in computer vision, that has many applications such as video-conferencing, multimedia indexing, access control and biometric authentication.

The reliability and response-time of face detection has a major influence on the performance and usability of subsequent processing, such as face recognition.

Numerous methods have been proposed to solve frontal, and more recently non-frontal face detection. Among all these approaches, machine learning algorithms such as Support Vector Machines, Neural Networks, and Bayesian Classifiers have received the most attention, and shown outstanding results.



Our detector extracts 19x19-pixel sub-windows from a given image. To detect faces at different scales, the original image is progressively down-sampled and submitted to the detector [1]. The 19x19 regions are first preprocessed and given to a cascade [2] of coarse-to-fine classifiers. These classifiers are obtained by boosting light invariant features. Finally, an arbitration is used to merge multiple detections.



The proposed face tracker is based on a frontal face detector that can be applied in real-time to every frame, and it is so fast that it provides the illusion of tracking. The face detector is using robust-to-illumination features and does not use any prunning tricks such as contours or skin colour.

Contact : Dr. Sébastien Marcel - marcel@idiap.ch

References
[1] P. Viola and M. Jones, «Robust Real-time Object Detection», IEEE ICCV Workshop on Statistical and Computational Theories of Vision, 2001

[2] H. Rowley, S. Baluja and T. Kanade, «Rotation Invariant Neural Network-Based Face Detection», Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, pp. 38-44, 1998

the ark
idiark
HEVs
haute école valaisanne
hochschule wallis

IDIAP Research Institute - Rue du Simplon 4 - P.O. Box 592 - CH-1920 Martigny
tel: +41 27 721 77 11 - fax +41 27 721 77 12 - info@idiap.ch - www.idiap.ch