

PAPILLON – POLYFACE

automated facial recognition system

PAPILLON-POLYFACE is a system designed for automatically identifying or verifying persons from facial images and for organizing and maintaining facial databases.

Besides mugshots, the **POLYFACE** database contains individuals' demographic data and verbal descriptions.

Facial images can be acquired from various sources: files of standard graphic formats, digital cameras and flatbed scanners.

Moreover, when used in conjunction with **PAPILLON AFIS** (Automated Fingerprint&Palmprint Identification System), text data and mugshots of each incoming tenprint are automatically exported from the **AFIS** to the **POLYFACE** database.

All records stored in the **POLYFACE** database can be divided into two groups:

- Record cards of known individuals, i.e. of those persons whose personal details are reliably known
- Record cards of individuals whose personal details are unknown or unreliably known (this sort of records allows for using facial composites (photofits) as mugshots)

To be inserted into the database, the facial image must be encoded. The operator determines all apparent anthropometric points, except the center of pupils which is coded

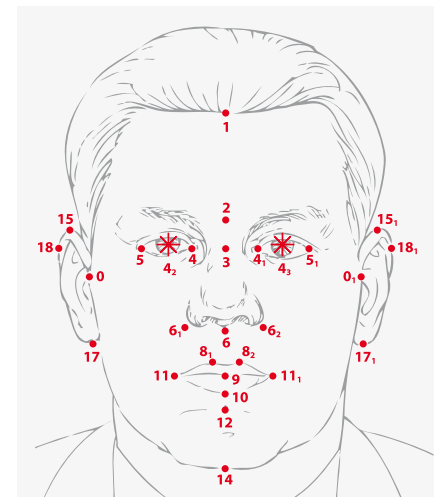
automatically by the system, in accordance with the prescribed procedure of coding. These face data are then saved together with the image and used by the image-matching algorithms.

Coding conditions:

- Automatic
- Manual
- Stereotyped

It is recommended to use the advantages of automatic coding when dealing with good-quality photo images, which are obtained under and meet the ISO/IEC 19794–5:2005 and GOST R ISO/IEC 19794–5 requirements, for instance, like those captured by means of the **PAPILLON-PHOTO** station. The automatic mode allows for manual correction of the anthropometric points.

Coding by a stereotype is useful when dealing with an abundance of facial images bearing some salient, national



facial features. The stereotype is a set of extracted anthropometric points - a template that the system automatically creates after completing the coding of a series of portraits that are very much alike. The operator just superimposes this stereotyped image on the subject's face slightly adjusting the position of landmarks. This feature considerably speeds up the process of coding.

Each newly entered object is saved to the system database. The information available in the database includes text data, photo images with assigned anthropometric points and a verbal description of the subject.

When the coding is completed, the system initiates a search of the database for other images with matching features and generates lists of potential matches. These candidate lists arranged as albums are given to the operator for visual examination to make a conclusion about their similarity. The new facial object is compared against both galleries of record cards – of known and unknown individuals, and its text data are compared to relevant alphanumeric data stored in the database as well. Thus, the output of searches will include:

- matching facial images of known individuals
- matching facial images of unknown individuals (unsolved, "cold" cases)
- matching demographic data

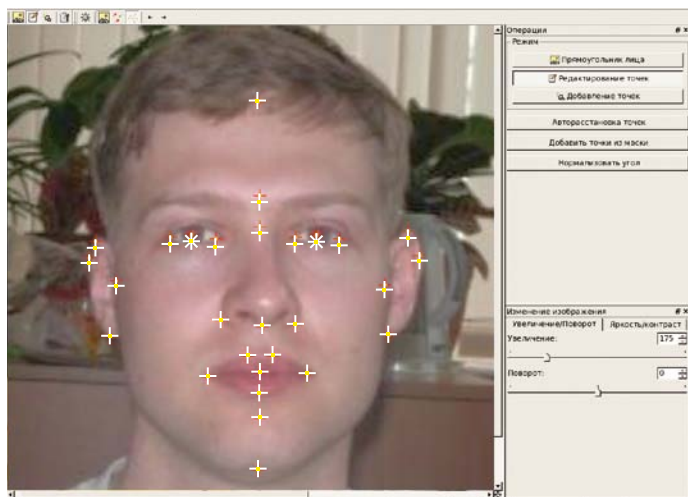
The **PAPILLON-POLYFACE** system enables the examiners to review all types of candidate lists, to edit the database objects and to print out search reports. It provides also tools for searching the database to find objects that match certain criteria, including specified verbal descriptions, and to sort any collection of objects by specific properties.

KEY CAPABILITIES

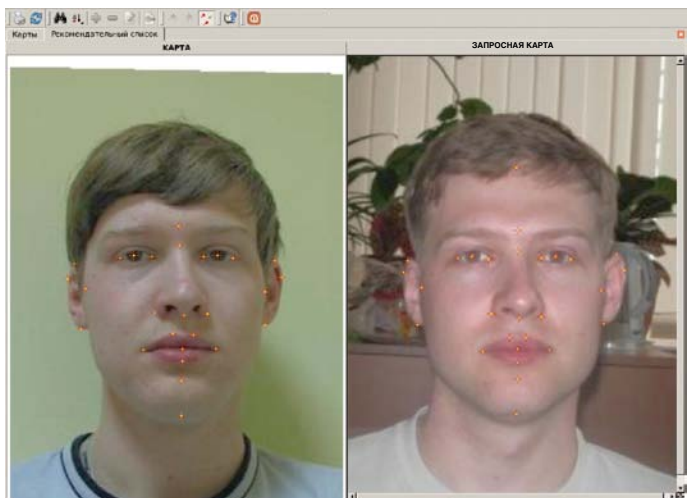
- Entry, coding and database storage of photos of face and distinctive features, textual information and verbal description
- Image acquisition from graphic files, digital cameras, flat-bed scanners
- Automatic searches by face data and generation of candidate lists
- Compositing and search by verbal descriptions
- Import of mugshots and textual data from tenprints stored in PAPILLON AFIS
- Facial database management: ad hoc selection, sifting and editing of database records
- Output of graphic and textual information for viewing and printing



Text data entry screen



Facial image coding screen



Search result viewer