

UDC 343

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POSSIBILITIES OF IDENTIFICATION UPON FACIAL RECOGNITION

Introduction

Identification based on the features of the face is a procedure commonly used in everyday life, likely, such identification option is a familiar method to unlock and access modern mobile phones. If we approach this field from the aspects of law enforcement, it is advisory to review and utilize every technique that can provide visual images or video recordings. Most of the video surveillance cameras placed all over the country, and the units installed in shops, shopping malls are be eligible to make meaningful recordings, moreover, there are also ‘mobile’ instruments, drones for this purpose. Cameras and video-cameras applied to drones enable these instruments to support law enforcement tasks. The recordings taken and projected by drones are most useful at dynamic actions that require vast movement, displacement and manoeuvres, or in case the observation and inspection of a broader area becomes necessary.¹ ‘Channelling’

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¹ Vigh A.: A drónok rendészeti alkalmazási lehetőségei, Belügyi Szemle 10. szám, Belügyminisztérium, Budapest, 2018, 100. o.

the data recorded by the above instruments into one single database could increase the chances to find the wanted person.

The system of facial photograph analysis

In its order, the Government appointed the Section for Facial Recognition Analysis operating under the Department of Criminal Services of the Hungarian Institute of Forensic Sciences to conduct facial recognition analysis activities. The main scope of the unit's operation is facial recognition analysis conducted upon the official request of other entitled authorities. The database contains any and all data and recordings otherwise taken at the record office of government issued documents when issuing identification documents, furthermore, it includes the database held by the authorities obliged to process personal data and data of domicile, the data of the partial registries stipulated in Sections 95, 96, 98 and 99 of Act II of 2007 on the admission and right of residence of third country nationals, the data of the refugees' registry, and the also the profile register of travel documents.

Processing and forwarding technical corresponding numbers² and meta-data³, the recording authorities allow the assessment of an official register⁴, operated by the analysts of the Section for Facial Recognition Analysis, using a special facial analytical system⁵, as these officers are exclusively involved in the analysis and evaluation activities of this special unit responsible for the execution of the Act.

² an alphanumeric identifier generated by the authority obliged to forward the data, projected to allocate the citizen's natural personal identification data and facial photograph to the profile data of the facial image

³ the date of recording the facial photograph forwarded to generate the facial profile at the register, furthermore, year of birth and gender of the person shown in the facial photograph

⁴ facial profile register

⁵ computer system and application implemented for the creation and comparative analysis of facial profiles, in order to process personal identification

On the facial photograph analysing registry and on the tasks related to the use of the facial photograph analysing system

Due to the fact, that, in several cases only photographs or video recordings are available to identify the perpetrator, the authorities turn to the instrument of facial photograph analysis more and more often. Legal conditions and demands of official electronic requests filed to the Section for Facial Recognition Analysis are stipulated in the instruction issued by the National Police Headquarters (hereinafter ORFK)⁶, while a separate order of the Ministry of Interior Affairs (hereinafter BM) regulates the requirements concerning the agreement concluded between the analyst unit and the requesting authority⁷. Each request must contain the reference number stipulated by the data-requesting authority⁸, and a proper authorization of data processing, stipulating the purpose of the accessibility in accordance with the provisions of the Act. The subject of the task must also be determined, stipulating whether target of the analysis is to find an unknown person or to check someone's identity. Priority marks may influence the term of the response. Presently, the applicant authority may choose either normal, expedited or instant handling of its request. Expedited or accelerated procedure must be requested with reference to the abuse of a minor, or in case of any state directly and gravely endangering public security or of priority law enforcement interests, while instant or immediate analysis may be requested for handling measures of qualified legal order or crisis situation caused by mass migration, thus every other case is processed at normal priority. Nevertheless, the facial image has to meet further demands. In case only one person is relevant in particular, only this person should appear

⁶ 11/2016. (IV. 29.) ORFK utasítás az arcképelemzési nyilvántartás és az arcképelemző rendszer igénybevételevel kapcsolatos feladatokról

⁷ 78/2015. (XII. 23.) BM rendelet az arcképelemző rendszer működtetésének részletes szabályairól

⁸ it may not contain any information that would allow to make any conclusions regarding the applicant police authority entitled to file the request, or to the case related to the image filed for identification

visually in the image, as possible, otherwise a description must be attached to the picture, ensuring that the analysis is conducted expressly on the desired individual. Of course, facial recognition analysis may also be requested and conducted regarding several persons appearing on the same picture, however, description of such process must be recorded in a separate annex. The description attached to the picture laying out the facial image may not contain any information that would directly refer to the applicant authority entitled to file the request, or to the case or to the person shown in the picture, that would allow the identification of the analysed person, thus, it must be limited to known and available supplementary information that may assist the identification of the individual. Such information, for example, is the time or the known time frame of taking the photo, the stipulation of the gender, known or suspected age of the person, description of the person's facial-morphology features and other special facial characteristics – regardless of the quality of the picture -, moreover, in case a graphic image of the person is filed with the request, a detailed description of the grounds of creating the image is needed, especially concerning the colour of skin, eyes and shape of the head.

Further demand concerning the images forwarded for identification, is that the picture made by or available at the police body entitled for the admission must be attached to the files that shall indicate processing of the facial image, and must be recorded at the appropriate surface stored in the RoboCop system. In case the facial image was not taken at the police facility – so the visuals can not be recorded and saved in the RoboCop system at once – the officer taking the picture must save and store the recordings on an information technology data medium, then, depending on the information technological circumstances, he must take care of structured recordings of the data in the RoboCop system without delay, and also, he must delete the previously recorded facial image

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from the data carrier simultaneously. Regrettably, the images filed for identification do not always meet the requirements, as sometimes they are not taken from the right direction or angle, or with the appropriate recording instrument, nevertheless, recommendations set the following requirements for the images shown in the picture, in order to secure successful identification.

The person shown in the picture subject for identification must be positioned face-on, in accordance with the following recommendations:

- lateral movement of the head can not exceed over 30°;
- vertical trim of the head can not exceed over 10°;
- the face should be well lit with diffuse light;
- lights coming from the sideways should be avoided when taking the picture, with regards to the fact that the shadows under the nose may significantly jeopardise the success of the identification.

In the picture filed for identification, the person to be identified

- may not wear a hat, cap, hood or any other clothing that would cover the face;
- may not wear sunglasses;
- and his eyes must be opened.

The picture filed for identification must be of good quality, taken at the best image resolution possible, in accordance with the following minimums:

- approved format of the picture filed for identification is the 'jpg' extension;
- in the picture filed for identification, the measured distance between the pupils of the two eyes of the person to be identified may only be minimum 50 pixels;
- image resolution of the facial photograph can not be less than 0,3 megapixel, whereas the space occupying of the face can not exceed over 2/3 of the picture.

However, meeting the above standards is quite difficult, the data content of the request may be deficient or the image proves to be insufficient for identification, so the applicant is called to resolve discrepancies within 15 days and in case such term would terminate without any results, the central authority shall close the request without particular outcome.

Different rules shall apply for photographing the unidentified bodies at the coroner's inquest, namely, in case the eyes of the body are shot, the medical doctor or the police officer member of the inquest committee shall, in sterile gloves pull the eyelids of the body, using both forefingers in a manner to avoid any distortion exceeding the shape and state of naturally opened eyes in order to promote successful digital facial recognition. When securing the opened position of the eyes, it must be taken into consideration, that strong lift if the eyelids may significantly deform or distort the unique characteristic points of the eyes and the forehead, that may risk successful identification. Should the state of the body allow, the facial image may also be recorded by lifting both the upper and lower eyelids, followed by folding the lower eyelids under. In certain cases stains or other physical contaminations can not be removed at the site where the body was found, or the repositioning the mouth to a closed state is not possible, therefore, in such cases photographing the face must be repeated at the site of the autopsy.

In order to ensure larger percentage of successful identifications the following procedures, methods are required:

- at least 4 close-up pictures must be taken of an individual, in a way, that the longitudinal axis of the camera is held perpendicular to the face;
- the geometric centre of the camera's lens must focus on the tip of the nose;
- even lightning of the face with diffuse light must be conducted in a way that the longitudinal axis of the camera's optics and the longitudinal axis of the

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light source form a 35-40° angle, whereas the longitudinal axis of the light source is located above the longitudinal axis of the camera's optics;

- in case of unidentified overweight bodies, distortive effects of the bended head and chop must be terminated in a way, that the head must be held up and while the chin must be pressed down, using sterile gloves;

- it is recommended to use single lens reflex cameras in the course of taking photographs at the coroner's inquest of unidentified bodies, and digital magnification is not allowed;

- pictures must be taken using (normal) objectives, determined by the manufacturer for the each type of cameras at (normal) focal length in appropriate to achieve undistorted photographs.

To sum it all up, we must admit, that photographing a dead body may seem to be a rather complicated procedure if conducted in line with the regulations, nevertheless, if the recording are taken by a properly trained person and all technical instruments necessary for quality pictures are available, successful identification can be pursued.

Checks

As newest field of its application, identification upon facial recognition can also be conducted during police checks in Hungary. On December 10, 2019, the Parliament has implemented omnibus Act CXVI of 2019 on the modification of statutory provisions for the simplification and digitalization of certain procedures, also modifying the Act on the police⁹ and the regulations of police checks, aiming to ensure more successful procedures. The Act came into force on May 1, 2020.

⁹ 1994. évi XXXIV. törvény (a 2019. évi CXVI. törvény egyes eljárások egyszerűsítése és elektronizálása érdekében szükséges törvénymódosításokról 6. § módosította), hatályos 2020.05.01-től

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Presently¹⁰, if the checked person refuses to verify his personal identity, the individual may be intercepted for the purpose of identification, also, in case of unsuccessful identification – if the person's identification can not be completed otherwise or there is no credible evidence for the identification - the police officer is authorised to take a photograph, take fingerprints of the individual I for the purpose of identification, furthermore, the officer may record the individual's external features by perception and measurement. For the purpose of identification, the photo taken at the site can be checked right on the spot through an electronic instrument designed for this purpose, using the automatic comparative measures regulated under the Act on facial analysis registry and the facial recognition system, according the regulations stipulated in the Act thereto. The checked individual may be arrested for further data verification, if this method fails on the site too. Of course, in case of failure of the check or verification of the identity, the person may only held in for the term necessary for the identification.

Actually, the practice of this new procedural entitlement is rather quick and simple, as the police officer takes a photo of the person subject to the check and compares this picture with the facial profiles recorded in the system. It is clear, that in such cases not the professionals of the facial recognition analysis unit complete the so-called candidate listing, but the data is generated and forwarded upon an automatic search in the system. In case of successful procedure the profiles showing the highest conformity become accessible immediately, so the police officer pursuing the check can access the personal identification data and photos at the identification and domicile registry using the instrument designated for this purpose. Nevertheless, this information may only be used during and for

¹⁰ a 1994. évi XXXIV. törvény 29. § 4, 4a, 4b bekezdése alapján

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the purpose of the checking process, furthermore, the acquired data must be deleted from the instrument immediately, but with 30 days the latest.

Summary

It is clear, that technical development and the changing of mentality it creates changes in the law enforcement as well. This study reveals that more and more procedural methods and measures enable recognition and identification upon facial images. Synchronisation of these tools and the facial recognition database in a unified system is definitely one of the tasks of the future, provided that wanted persons and their manoeuvres can be detected all over the country, as it may also reveal further criminal actions.

IRODALOMJEGYZÉK

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Abstract

Biometric identification is one of the most developing field of law enforcement, and criminalistics at that. There are several ways to identify a person upon his looks, features, attributes or other personal characteristics. Rather often only pictures or video-recordings of the relevant person are

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available to complete the identification. In order to ensure the success of a procedure, specific instruments are required to take quality recordings, furthermore, the assessment of a proper database is needed – to have a mutual ‘comparative sample’ – holding pictures taken in consideration of selected aspects of each and every citizen, as possible.

Key words: biometric identification, facial photograph analysis, criminal techniques

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