

Examples of the application of biometrics in forensics

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Abstract

In this presentation we will focus on the design of biometric classifier for forensic applications. Two examples will be addressed: forensic face recognition based on facial features, and face recognition at a distance.

Example 1: How Pattern Recognition Can Support the Forensic Examiner

In this presentation we will show how properly designed classifiers can support the task of an automatic method to compare facial marks and on how the result can be expressed in a likelihood ratio in order to quantify the evidential value. In addition, we will illustrate to what extent forensic facial comparison is different from biometric facial comparison as used in for instance access control.

Example 2: Advances in Face-Recognition at a Distance

We address the challenge of facial recognition for surveillance applications. The typical problem here is the comparison of a high-resolution reference image, for example a mugshot, with a low-resolution trace image taken at some distance, for example found on a surveillance video. I will demonstrate that realistic low-resolution images that are taken at a distance, are not equivalent to low-resolution images obtained by down-sampling higher-resolution images. This implies that in order to improve the recognition performance specific training of classifiers is required, but also that a proper evaluation on realistic low-resolution images is crucial. In the presentation, I will discuss the implications on design, training and testing of face recognition systems for surveillance applications and propose a mixed-resolution classifier for this purpose. Attention will be paid to the deployment of convolutional neural net based facial recognition systems for mixed-resolutions.