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Dipartimento di Informatica

Biometric Recognition:
How Do I Know Who You Are?

Lectio Magistralis

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Abstract - A wide variety of systems require reliable personal recognition schemes to either confirm or determine the identity of an individual requesting their services. The purpose of such schemes is to ensure that only a legitimate user, and not anyone else, accesses the rendered services. Examples of such applications include (i) accessing buildings, computer systems, ATMs, and cellular phones, (ii) obtaining driver licenses and welfare benefits, and (iii) issuing passports and visas. Biometric recognition, or simply biometrics, refers to the automatic recognition of individuals based on their anatomical and/or behavioral characteristics (e.g., fingerprint, face, iris, voice). Biometrics allows us to confirm or establish an individual's identity based on "who he is", rather than by "what he possesses" (e.g., an ID card) or "what he remembers" (e.g., a password). Biometric systems also introduce an aspect of user convenience; they alleviate the need for a user to "remember" multiple passwords associated with different applications. However, a biometric system has to contend with problems related to non-universality of the trait (e.g., some persons have very poor quality fingerprints), limited recognition performance (e.g., face recognition in the presence of illumination changes), large intra-class variability (e.g., change in voice due to cold), and spoof attacks (e.g., fake fingers). Some of these problems can be addressed by multimodal biometric systems that fuse the evidence presented by multiple identity traits (e.g., face and fingerprint) of a user. In spite of the fact that the first Automatic Fingerprint Identification System (AFIS) was installed around 1965, biometric recognition remains a very difficult pattern recognition problem. This talk will present an overview of biometrics, state-of-the-art performance and current research activities.

The lecture will take place at **4:00 pm** in the **Sala Verde** of the
Dipartimento di Informatica - **Ca' Vignal 2, Strada le Grazie 15, 37134 Verona, Italy**

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Note on the Lecturer *- Anil Jain is a University Distinguished Professor in the Departments of Computer Science and Engineering, Electrical & Computer Engineering and Statistics & Probability at Michigan State University. His research interests include statistical pattern recognition, exploratory pattern analysis, and biometric authentication. Several of his papers have been reprinted in edited volumes on image processing and pattern recognition. He received the 1996 IEEE Transactions on Neural Networks Outstanding Paper Award and received the best paper awards from the Pattern Recognition Society in 1987 and 1991. He is a Fellow of the ACM, IEEE, International Association of Pattern Recognition (IAPR), AAAS and SPIE. He has received a Fulbright Research Award, a Guggenheim fellowship and the Alexander von Humboldt Research Award. He delivered the 2002 IAPR Pierre Devijver lecture. He holds six patents in the area of fingerprint matching. He is the co-author of several books, including Algorithms for Clustering Data, Prentice Hall, 1988, Handbook of Fingerprint Recognition, Springer 2003, Handbook of Face Recognition, Springer 2005 and Handbook of Multibiometrics, Springer, 2006. ISI has designated him as a Highly Cited Researcher.*