

BIO-IDENTITY: BIOMETRIC IDENTITY AUTHENTICATION

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<http://www.it-sudparis.eu/biometrics>

PROJECT AMBITIONS AND OBJECTIVES

Biometrics, which consists in checking the identity of an individual on the basis of one or more of his/her personal traits, is increasingly emerging as an alternative or complement to traditional identity authentication methods. Although a number of commercial solutions have already been offered, there is nonetheless still a need to conduct medium-term research, either to improve the quality of existing systems or to explore new modalities. Furthermore, the use of only one modality is often limited, either in terms of performance or in terms of difficulty of use. This is why it seems useful to evaluate the contribution of multimodality in this context.

The objective of this project is to perform research focusing on both technical aspects and usages of biometrics. We will therefore mainly focus on producing new algorithms, new assessment protocols and adapting algorithms to sensors.

MAIN ACHIEVEMENTS

Research themes

Development of new algorithms

- Identity authentication by on-line manuscript signatures: development of a new system based on the fusion of information produced from a Markovian mode, patent pending, carrying of signature authentication algorithms on PDA in the context of the Securephone project, proposition of a new quality measure relying on entropy
- Iris identification in degraded mode, development of a new system integrating local correlation quality measure information, collaboration with CASIA in China within the framework of the IRFACE project with INRIA, on-going collaboration with Thales (2 common PhD)
- Research into face authentication in 2D and 3D mode, landmark detection, IR and visible images, illumination reduction
- Merging of multimodal data: research towards the links between performance measured on virtual bases and a real bases, performance in mobility-condition tests in the context of the Securephone project. Development and test of score fusion algorithms, feature level fusion, independence tests in relation with virtual databases
- Hand vein authentication, based on Log-Gabor and SIFT features

Coupling of sensors and algorithms

Identity authentication using near Infrared-type face images, differential image

sensor able to decrease illumination effects,

Coupling of surveillance video and biometrics

In the framework of sequences containing persons in movement, the challenge is to be able to recognize (identify) the persons relying on their gait, face, iris.

Assessment protocols for biometric algorithms

Acquisition of databases, development of reference systems and assessment protocols (in the framework of the BioSecure project (<http://www.biosecure.info>))

Biometric implementation on embedded systems

Taking into account degradations linked to mobility and low quality sensors, evaluate the interest of multi-biometrics

Biometrics and dedicated platforms (FPGA etc..) collaboration with ENIS, Sfax, Tunisia

Biometrics and Security

Proposition of new schemes in crypto biometrics including key generation, cancellable biometrics

Usage tests and field studies in the framework of deployments of biometric systems.

- Sociological aspects: VISA trials with the Ministries of the Interior and Foreign Affairs: BioDev project, Study of usages in the VINSI project
- Legal aspects: Participation in the Asphales project, (ACI-Ministry of Research) and multimodality tests (signature, voice, faces)

BioSecure project: European FP6 project

Technical coordination of the project

Preparation and implementation of the residential workshop (2005) and evaluation campaigns

Development of iris, signature, speaking faces, hand shape reference systems

Acquisition of a large multimodal database and production of related evaluation processes. Organization of open evaluation campaigns.

Patent

Filing of a patent: Signature authentication, Sequential data identification process.

Filing on a patent: A biometric verification system through iris based on the weighting of phase correlations models with a Markovian quality measure.

Dissemination

In addition to its involvement in national and international symposia, the Bio-Identity team regularly collaborates within the framework of initiatives designed to disseminate scientific knowledge to the general public:

- Scientific committee for the “Biometrics” exhibition at the Cité de la Science, Paris (B. Dorizzi)
- DIGITIP seminar (Ministry of Finance and Industry) on “electronic identity” in 2005 (B. Dorizzi, G. Dubey, S. Craipeau)
- Chairmanship of the Identech session in 2005 (B. Dorizzi)
- Presentation to CNAM, La Recherche, in 2005 (B. Dorizzi)
- Presentations at workshops for European BioSec, INSPIRED workshops (B. Dorizzi, D. Petrovska)

PROJECT CONTRACTS

BioSecure : Biometric Secure Authentication

- Coordination of the NoE, 2004-2007, 30 partners, 3 M€
- Framework for test of biometric algorithms

SecurePhone : Secured Transactions on a PDA through multi-biometry

- STREPS 2004-June 2006, coordinated by ATOS and Informa
- Integration of Dynamic Signature, face and voice on a PDA

Bio_Mul : Multimodal authentication

- ACI Sécurité

VINSI : Vérification d'Identité Numérique Sécurisée itinérante

- Project Oppidum Thales, Trusted logic, GET/INT
- Secured terminal with face and fingerprints

Biodev : biometric visas experimentations

- Usage Tests

IV2 : Identification through Iris and Face via Video (Technovision)

Database construction

Biotyful : BIometrics and cryptographY for Fair aUthentication Licensing

- ANR telecom, ATMEL, FRANCE TELECOM, GET/INT, GREYC
- Cryptobiometrics

Videoid: Identification de comportements et de personnes par la vidéosurveillance

- Behaviours and person identification through surveillance video

XVISION: eXtended-Vision

- Wide spectrum camera for extended vision

KIVAOU: Analyse de séquences video

Video sequence analysis

PFC: Plates-Formes de Confiance

Trust platforms

SIC : Sécurité des Infrastructures Critiques

Security of Critical Infrastructures