

WG3

Forensic Behavioural and Soft Biometrics

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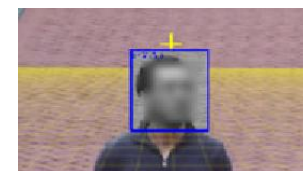
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WG3 Tasks

- Main topics to be addressed:

1. Develop automatic methods for **non-cooperative recognition** of individuals **at a distance** from their style of action/actions using video surveillance systems.



2. **Modelling individual human's behaviour** capable of **predicting future actions** based on a given situation, specific behaviour, which was exhibited during the criminal act and environmental factors.



WG3 Tasks

- Main topics to be addressed:

3. Automatic **extraction of soft biometric** features (e.g., gender, ethnicity, age, height, weight, eye color, moles, freckles, birthmarks, tatoos) in a nonintrusive manner, to assist in people recognition in forensic applications (e.g., identification of disaster victims).



4. Combination of **behavioural and soft biometric** features in **fusion schemes** with primary biometric characteristics in order to improve the overall accuracy of the biometric recognition and strengthen the biometric evidence.



WG3 Participants

WG3:

- 24 Participants
- 12 Countries

To join, please send a message to
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BE	Michel	Verleysen
DK	Kamal	Nasrollahi
DK	Peter K.	Larsen
DK	Thomas B.	Moeslund
EL	Constantine	Kotropoulos
EL	Ioannis	Pitas
ES	Carmen	Garcia Mateo
ES	Jose Luis	Alba-Castro
ES	Julian	Fierrez
FI	Matti	Pietikäinen
FI	Tomi	Kinnunen
FR	Bernadette	Dorizzi
FR	Sebastien	Brangoulo
HR	Slobodan	Ribarić
IT	Federico	Cervelli
IT	Massimo	Tistarelli
IT	Patrizio	Campisi
NL	Raymond	Veldhuis
NO	Christoph	Busch
NO	Daniel	Hartung
PT	Luis	Ducla Soares
PT	Paulo	Lobato Correia
UK	Mark	Nixon
UK	Michael	Fairhurst

Participants Research Interests

- WG 3.1 – Non-cooperative recognition of individuals at a distance
 - **Face recognition** at a distance and from surveillance cameras, including 3D modeling – *Raymond Veldhuis, University of Twente, The Netherlands*
 - Frontal **gait recognition** exploiting depth information – *Paulo Correia (IST-IT), Luis Soares (IUL-IT), Portugal*
 - Other possibilities:
 - Speech;
 - Iris;
 - Gesture recognition;
 - ...

Participants Research Interests

- WG 3. 2 – Human behaviour modelling, to predict future actions
 - Some possibilities:
 - Human behaviour analysis;
 - Crowd behavioural analysis;
 - Detection of unusual/abnormal events;
 - Analysis of context/environment/events conditioning behaviour (e.g., departing train);
 - ...

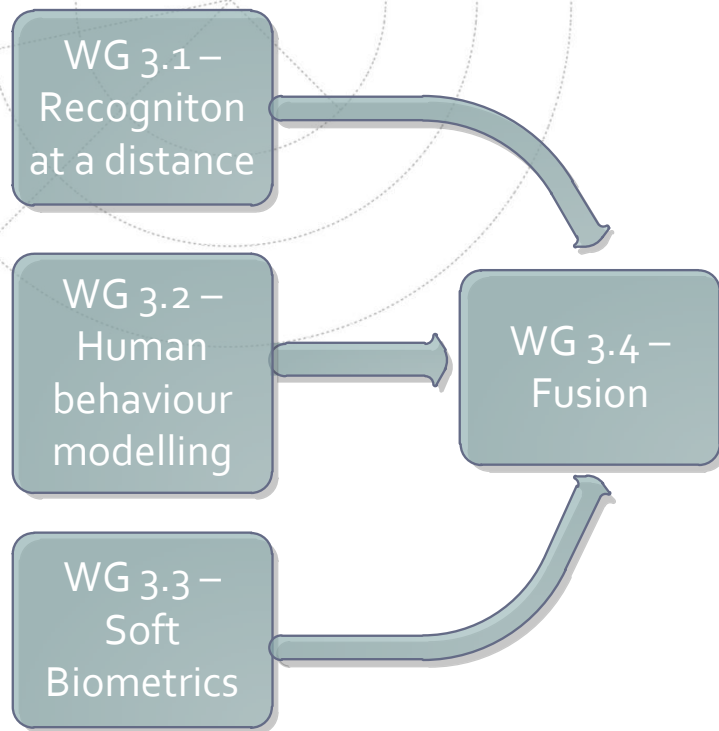
Participants Research Interests

- WG 3.3 – Extraction of soft biometric
 - Automatic extraction of soft biometric features including **gender**, **age** and **ethnicity**, using e.g. approaches based on variants of local binary patterns – *Juha Ylioinas, Matti Pietikäinen, Oulu, Finland*
 - **Age** estimation from face images; **geometric face** recognition – *Yosi Keller, Bar Ilan University, Israel*
 - Automatic extraction of soft biometric features; **gender** and **age** soft biometric features - *Slobodan Ribarić, FER. Croatia*
 - Network of cameras to provide a **high-resolution image** which can help in **better extraction of soft-biometrics** – *Kamal Nasrollahi, Thomas B. Moeslund, Aalborg University, Denmark*
 - **Audio source identification** – *Constantine Kotropoulos, AUTH, Greece.*
 - Image/video **recognition of pornographic contents** using skin detection, contour extraction and classification – *Ioannis Pitas , AUTH, Greece.*
 - Other:
 - height, weight, eye colour, hair style, moles, freckles, birthmarks, scars, marks, tattoos;...

Participants Research Interests

- WG 3.4 – Fusion of behavioural and soft biometric with primary biometric characteristics
 - How soft biometrics (gender, age and ethnicity) affect face biometrics? – *Juha Ylioinas, Matti Pietikäinen, Oulu, Finland*
 - Use of facial dynamics (or behaviour) for improving face recognition – *Juha Ylioinas, Matti Pietikäinen, Oulu, Finland*
 - Multi-modal sensor data analysis (audio/visual) – *Yosi Keller, Bar Ilan University, Israel*
 - Study how machine learning could help in biometrics and forensics; (semi-)automatic classification from multimodal sources – *Michel Verleysen, Université Catholique de Louvain, Belgium*
 - Manually combine all possible perpetrators "bodily" characteristics from (poor/difficult conditions) surveillance images, such as facial, gait characteristics, bodily proportions, photogrammetrical measurements. – *Peter K. Larsen, University of Copenhagen, Denmark*

WG3 Workflow



Open issues:

- Other approaches?
 - Behavioural and distance recognition
 - Behaviour analysis
 - Other soft biometrics
 - Fusion
- What are the needs (forensic science perspective)?
- What can automatic systems provide? (performance metrics)
- Need for representative datasets?
- ...

WG3 Planning – Year 1

- Identify:
 - Most pressing requirements for each task and those willing to work on them
 - Areas where synergies can be explored
 - Need for common datasets
- Fusion could act as integrator of all contributions
- ...

WG3 Planning – Year 1

- STSM (research visits among WG3 members)
 - Propose at least 1 for WG3 in the first year?
- Joint publications
 - Identify topics of common interest
- Organization of special sessions, tutorials and workshops on the topics of WG3.
- ...
- Upcoming events:
 - WG meeting: 7 September, Coventry, UK
 - MC + WG meeting: December 2012
 - March 2013 – first Workshop