FASTPASS – A REFERENCE SYSTEM FOR NEXT GENERATION ABC SYSTEMS

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www.passengerterminal-expo.com



Presentation outline

- FastPass project, consortium, objectives, achievements and time line
- Next generation sensors, algorithms and frameworks
- Innovative scenarios and current and planned demonstrations VW



Camera-mirror system for kiosks (from Modi)





Cruise ship scenario

Surveillan & Biometri

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FastPass Objectives



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- Next-generation sensor development and novel frameworks, software and algorithms
 - On-the-move biometric identification, speed, quality, reduced intrusiveness, counter spoofing and costs
- Innovative scenarios based on harmonized architectures
 - Several air border scenarios, cruise-ship scenario, land border scenario with travellers remaining in the cars
- Methodology for a holistic risk and security assessment
 - List of threats, with type, impact, exploitability and mitigation strategy

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Face Tower



On-the-move face identification

New type of Face ID unit:

per hour

- Camera field of view deflected by fast moving mirror.
- ID unit in walking direction above the gate
- Adomo® cameras for face / iris capturing at height of 1,2 2,2 m at different positions.

Challenge: for capturing face, users look around without looking at the camera properly and standing still close to the sensor

Solution: face template generation from a series of face images (10+ images)

- Can be installed for land border and sea border scenarios
- Results in >700 travellers throughput per hour instead of 150



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Iris recognition prototype Current challenge on the market:

- Two groups of iris cameras
 - Distance up to 0.5m, price range €1-5K, require user cooperation
 - Distance up to 2m, price range €15-40K, require less user cooperation

Objective:

- Longer distance, less intrusive, more user friendly
- Much lower price

Solution:

- Distance & region: 1.5m x 2m, with Adomo® mirror
- Novel iris capture camera, kiosk iris enrolment
- Usable as token, Minimum user cooperation
- Price: around €5K

Future focus:

- Development to reduce the size of the mirror
- To make integration into different housing easier

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Spoofing-resistant multimodal face and fingerprint fusion



Contribution:

- Extension of Multi-Fingerprint + Anti-Spoofing Framework (IJCB'14) towards multiple modalities
- Novel fingerprint counter-spoofing algorithm, improved performance (LivDet dataset)
- Further theoretical presentations of technique.
- Can be ported to multiple modalities

For technical description, please refer to:

P. Wild, P. Radu, L. Chen and J. Ferryman, Robust multimodal face and fingerprint fusion in the presence of spoofing attacks. Pattern Recognition Journal, 2015.

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Document authentication





TEM Waveguide in Shielded Enclosure:



Interoperability analysis

- Comparison of sensors and hardware
- Analysis of document aging and deterioration
- Measurement of illumination spectra

Security analysis

- Document simulator
- IEMI analysis and improvements

Advanced feature detection and Doc-Teacher (Regula)

- Comparison of optical information against electronic data
- Administrative module for detailled document template generation
- Document checks on various levels

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Person separation /Left object detection



	Color image	Depth image	Fused Static Foreground
glove		and the second	•
empty bottle	-		
passport		a the sec	-
magazine			

Person Separation

- Delivers high-level anti-tailgating and antipiggybacking person detections.
- Very few false alarms due to robust 3D vison and a complex head-shoulder model.

Left item detection:

 Fusion of 3D and image information allows detection of arbitrary objects.

Robustness of algorithm further increased by temporal integration and synchronization with the eGate's door signals



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Queue length





3D Queue Detection

- Depth ordering of people
- Robustness against illumination, shadows,
- Enables scene analysis
- Flexible camera perspective
- Single camera monitores an area of 10mx15m

Features

- Automatic detection of arbitrary shaped queues
- Enables queue management to minimize waiting time

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Air border

- Operational Test at Vienna Internation Airport
- Comparison of several installation types
- **Documents:** ePassports
- Travellers:
 - Stage 1: EU/EEA/CH
 - Stage 2 +3: + TCNVH, + TCNVE
- **Biometrics**:
 - Face (all Stages)
 - +Finger (Stage 2), +Iris (Stage 3)
- RTP (Stage 3) will be simulated



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Air border



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Cruise ship

- Demonstration Test at Port of Piraeus
- Document Authentication
- Passenger Authentication and Identification (1 :n)
- Documents: ePassports
- Travellers: EU/EEA/CH, TCNVH, TCNVE
- Biometrics:
 - Face (+ Iris as test)
- RTP will be simulated







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Land border

- Demonstration at Moravita
- Exit control for frequent traveller
- Enrolment of
 - ID documents
 - Vehicle documents
 - Driving license
- Moveable terminals
- ANPR to detect vehicle
- Driver and Co-driver check
- Customs check, occupancy check, stamping is done manually



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FastPass – the system/technology, that

…is secure

- Resistent: to latest attacks on document scanner, to biometric spoofing
- Risk Assessment, Security Assessed by dedicated methodology
- ...you like
 - UI developed with extensive feedback from different European border guards
 - Process and procedures developed with extensive evaluation from traveller groups
 - Respects privacy and data protection (Data protection impact assessment DPIA)

…is harmonized – and shows new processes and scenarios

- ONE reference architecture serving many processes
- First European solution for cars at land border with ABC
- First solution for cruise ships
- Real comparison of different approaches on an airborder crossing point

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Туре	
Papers in Journals or Conference proceedings	
Presentations of the project (conferences)	
Workshop (among them 4 organisation/chairing)	
Press articles, specialised magazines	
Academic work	2
Stand (among them 6 demo)	10
Video	3
Newsletter	8
Blog	4
Total dissemination activities	



QEII CENTRE, WESTMINSTER, LONDON, UK CONFERENCE: 9-11 JUNE 2015 EXHIBITION: 10-11 JUNE 2015

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STRIAN INSTITUTE

TOMORROW TODAY

Research project

2014, 2015 and 2016

conferences



Organizing 1st International Workshop on Identification and Surveillance for Border Control (ISBC 2015)





BIOMETRICS INSTITUTE Identities at borders

eu-LISA conference: The future tested: Towards a Smart Borders realit

Passenger Terminal CONFERENCE



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Consortium members at PTE



GUNNEBO[®] For a safer world Stand: 7005



Stand: 10065



secunet

Stand: 5105



Stand: 10102

VERIDOS

IDENTITY SOLUTIONS by Giesecke & Devrient and Bundesdruckerei

Stand: 5105

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Thank You ! Contact information www.fastpass-project.eu Email: FastPassCoordinator@ait.ac.at



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